VOL · 75 NUMBER 2

1 9 2 3 4

FEBRUARY

THE ARCHITECTURAL RECORD

CONSTRUCTION CODE APPROVED, MONEY FOR PRIVATE BUILDING CONSIDERED

The Code of Fair Competition for the Construction Industry was approved by President Roosevelt on January 31 and goes into effect on the thirtieth day thereafter. It covers the designing and the constructing of buildings and other "fixed structures . . . intended for use in industry, commerce, sanitation, transportation, communication, flood control, power development, reclamation and other similar projects or services."

The Construction Code permits branches of the industry to organize themselves as divisions, each of which may submit a specialized code which when approved becomes a chapter of the Construction Code. Thus, the term "division" means "a branch of the industry which has been or may hereafter be defined in a particular chapter of this code."

The Construction Code as approved consists of an opening chapter of general provisions and such division codes or chapters as were ready for submission along with the general provisions. Chapter I governs the industry in so far as it has not yet organized itself under approved division codes. The architects' code, when signed by the President, becomes a chapter of the Construction Code.

Administrative functions are exercised mainly by a Construction Code Authority and Divisional Code Authorities, which include non-voting members appointed by the Administrator of Title I of the National Industrial Recovery Act. The primary object of the code was understood to be regulation of competition between employers. The sponsors of the code, assuming that the general interests of labor would be sufficiently protected by the non-voting members, made no provision for labor representation on the various code authorities; division boards, each containing two representatives of labor and two of employers, under an impartial chairman, were empowered to hear local complaints with reference to hours, wages and conditions of employment.

The principal delay in formulating an acceptable code arose over the question of labor representation. The solution finally reached is a National Construction Planning and Adjustment Board of twenty members, one-half labor, under leadership of a Presidential appointee, together with supplementary regional boards. This arrangement leaves intact the power of employers to administer those parts of the code which deal with competition among themselves, but provides for joint administration by labor and employers of many important and troublesome labor problems.

A minimum of 40 cents an hour for unskilled labor is established, together with a forty-hour week, rising to forty-eight hours under certain conditions. Wages and hours may be reconsidered by the Planning and Adjustment Board, which is also to handle jurisdictional disputes between labor unions.

The approval of the Construction Code in its present form does not complete the projected organization of the construction industry, but it clarifies objectives and sets up machinery which should facilitate further progress. Organization of the construction industry in accordance with the principles embodied in the code is a first step toward rehabilitation. The next logical step is organization of credit facilities for private construction projects. (A reprint of Chapter I of the Construction Code will be found in this issue.)

POSSIBILITIES FOR RESIDENTIAL BUILDING

A residential building revival could do much to provide the basis for a sustained recovery in business. But is there any real economic demand for housing? If there is a demand, shall government provide the senior financing or shall the conventional sources of mortgage money produce the funds? What of the disparity between building material prices as a group and the general price level? What of the distressed residential properties that now can be purchased from mortgagees in possession at prices far below present replacement costs? These are a few of the questions which must be answered before private credit can be expected to flow effectively into residential building projects.

Fortunately these conditions are recognized both in and out of government circles. The Real Property Inventory which is now in process in 63 cities has as its basic function the determination of existing housing facilities in those centers. The announced purpose of John H. Fahey, Chairman of Home Loan Bank Board, to seek additional enabling legislation from Congress to permit a broader program of home financing is another piece of evidence that some of the factors are being isolated. The study of modernization possibilities both by the Home Owners' Loan Corporation and the Housing Division of the PWA is still another avenue of investigation.

The extension of Federal Savings and Loan Associations is being actively furthered, especially in those sections of the country where existing financing facilities are unable to supply needed funds for home-building. At the same time Congressional Committees are investigating numerous plans to supplement the existing governmental financing machinery, not the least important of which involves the establishment of a Central Mortgage Banking System. Already a bill has been introduced in Congress to guarantee the principal of the bonds of the Home Owners' Loan Corporation where hitherto they were guaranteed by government only as to interest payments; in addition this same bill provides for a $3,000,000,000 increase in the issuing power of bonds of the Home Owners' Loan Corporation and that about 50 per cent of this amount be made available for the erection of new homes.

In some quarters in Washington a plan has been advanced which proposes that the government accept part of the risks customarily taken by equity-holders and those supplying junior financing. Under this proposal the government would advance perhaps up to 40 per cent. of the value of a housing project at a nominal rate of interest and with a long period of amortization, selling the first mortgage bonds secured by the project to investors, both private and institutional.

These plans all have active sponsorship in important quarters. What is needed now is a coordinating agency of government to investigate their merits individually and in relation to the whole. The focal point of the problem inheres in the restoration of residential building activity.

There appears some reason to believe that in the near future a broad review of all new governmental units directly and indirectly interested in the revival of residential building will be undertaken in order to appraise the effectiveness of existing instruments of government and to provide the basis for such supplementary aids as appear indicated. This would materially clarify the present outlook for residential building mortgage money, since such a coordinating analysis should tend to disclose, first, the need for building; secondly, the ability to supply the demand, if any is found to exist; and, finally, whether the money should be supplied by government alone, by private capital alone, or by both in a soundly conceived cooperative effort.

Wide World

Boulder City, Nevada — a housing development for workers employed in the town and on the dam. At left center is shown the new public school; to the right of the school is the post office.

REPLANNING OLD AREAS FOR NEW HOUSING

By JOSEPH PLATZKER, Secretary, East Side Chamber of Commerce, New York City

It is now timely that we should try to settle the issues behind the clashing viewpoints of the architects and city planners who insist that low-cost housing should be planned in the outskirts of our cities in order to depopulate our slums as opposed to those who ask for re-housing and re-planning the blighted and slum areas in a well-balaned clearance plan.

The cheap land cry is indeed a fallacy in more ways than one. Cheap land is idle land where no expenses have been made for improvements and where the city itself has furnished no services. Clarence Stein, architect, is a champion of cheap land development; the recent Federal loan he received for his Hillside Housing Development in a sparsely settled part of the Bronx apparently supports his views although future costs of municipal services for his new settlement will tell another story. I do not wish to indulge in criticism of this or other specific housing projects, and am more desirous of pointing out that proposed outskirt developments will never settle or solve our slum problem when at the same time they add to the financial burdens of the cities. In the first place, efforts to ignore our large slum areas even for another decade will not cause them to die a natural or unnatural death. They will simply keep on changing, mostly for the worse.

Those who attack land values in the slums as outrageously high in comparison to those on vacant lots have not stopped to inquire the reason for such values. Even the Lower East Side of Manhattan has land values varying from $4 to $20 a square foot, depending on location, wihch are not on the whole high. The values in this community have been dropping for four years, but they will soon be finding a resistance level. More than 60,000 families still live on the Lower East Side and at least 12,000 retailers, jobbers, wholesalers and manufaturers still do an extensive business. In this section, for example, New York City spent more than $55,000,000 in a variety of public improvements since 1929.

Improvements of municipal services will be found in many old tenement areas in other cities. Are we to shut our eyes to these facts? Should we allow the existing widespread municipal services in the slums to be abandoned? Would slums in the big cities stop growing worse if we tried to abandon them? Wouldn't new hideouts in abandoned and semi-abandoned buildings promote more crime and delinquency? Would any one believe that either lending institutions or private investors in first mortgages in the slums would be scared by the cheap land cry in the outskirts and fail to safeguard their investments? How could the municipality be expected to economize reasonably in its budget and to cut costs of government if it would be continually called upon to extend transit lines further from the center and to build more municipal services for newer communities?

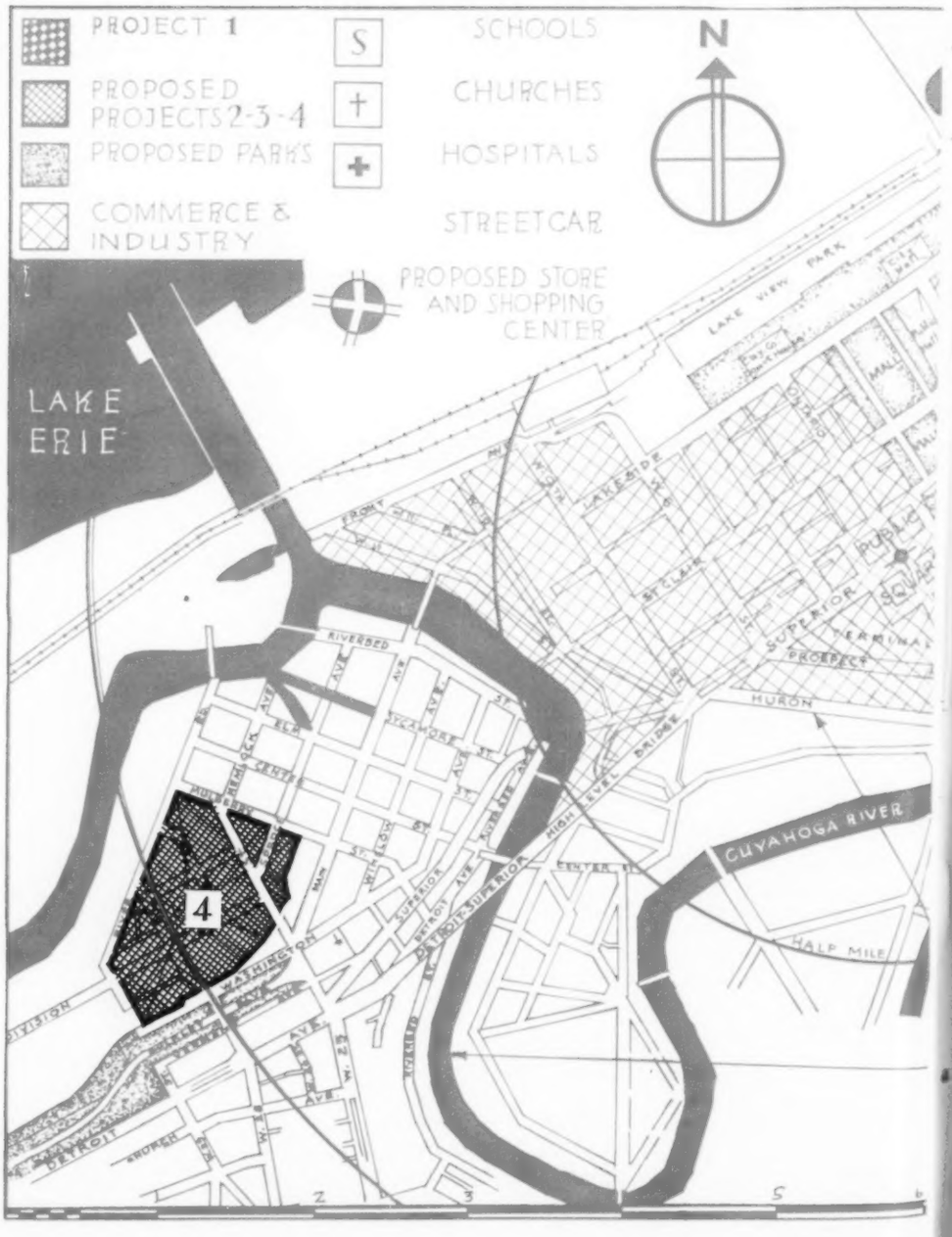
(*Continued on page 32, advertising section*)

CLEVELAND HOUSING

LOW-COST APARTMENTS

PLANS SHOWING HOUSING TYPES A, B, C, D, E AND F.

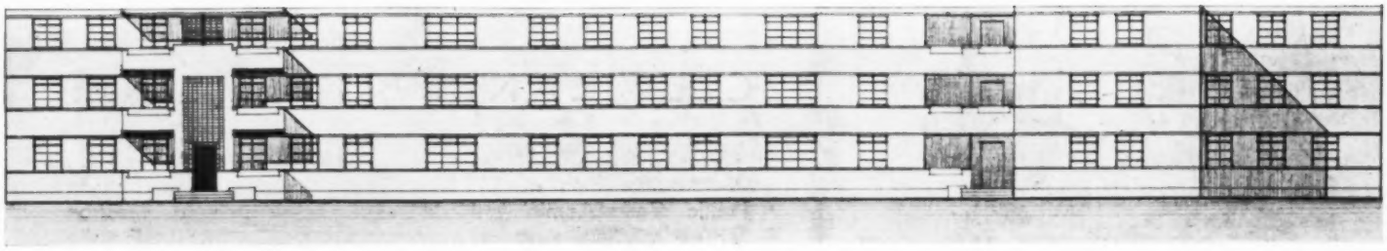
WALTER R. McCORNACK
JOSEPH L. WEINBERG and
CONRAD AND TEARE
Associated Architects
FREDERICK BIGGER
Consulting Architect



CLEVELAND HOMES, INC.

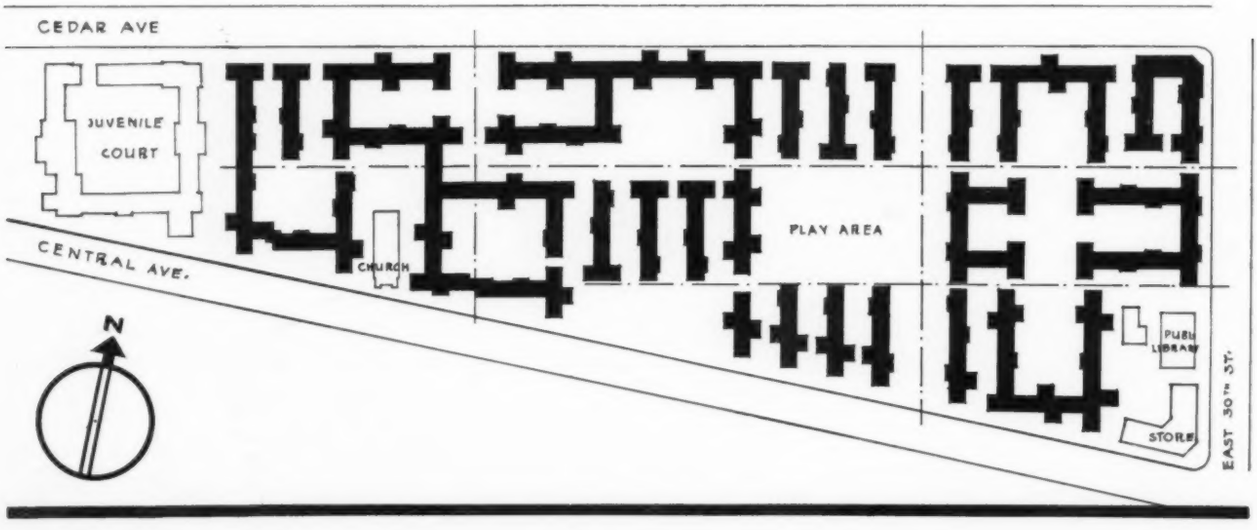
A tentative loan of $12,000,000 has been granted by the Public Works Administration to a limited dividend corporation for undertaking a series of housing developments under the auspices of the Mayor's Business Recovery Commission. The projects are to cost not more than $14,000,000. The proposed housing is to yield an average monthly rental of between $8 and $8.50 a room.

CLEVELAND HOUSING



PROJECT No. 1

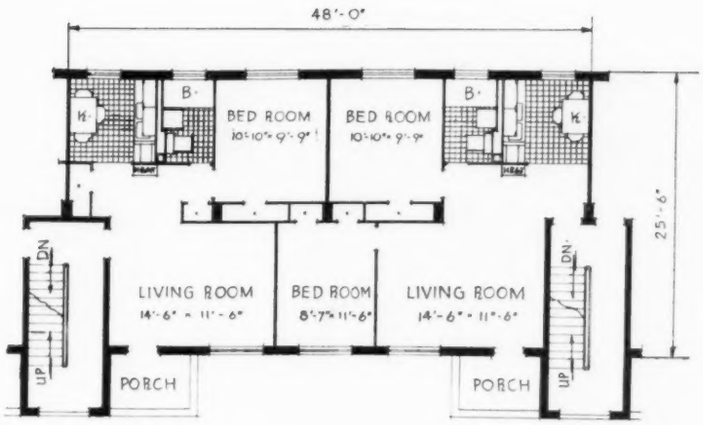
(See map on page 105)



CLEVELAND HOUSING

LOW-COST APARTMENTS

THIS CONDITION OCCURS WHERE A THREE-ROOM APARTMENT INTERLOCKS WITH A FOUR-ROOM, AND WHERE EACH IS SERVED BY A DIFFERENT STAIR.



TYPE 'D' 3 & 4 ROOM COMBINATION

0 5 10 15 20 25 30

FACTS ABOUT PROJECT No. 1:

32 per cent coverage; three-story walk-ups.

Approximately 900 apartments.

Approximately 3,400 rooms.

Average monthly rental—$6 a room.

Land cost—approximately 85 cents a square foot.

Construction (cost, approximately 30 cents a cubic foot)—

Masonry exterior walls.
Floors, beams and columns of reinforced concrete.
Interior finish in plaster.
Wood floors laid in mastic.

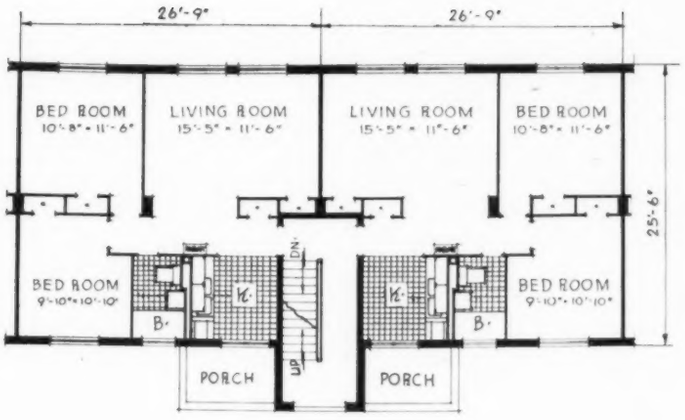
Unit apartment heaters—gas-fired or fed by central steam plant.

Equipment—range, mechanical refrigerator, built-in cabinets.

CLEVELAND HOUSING

LOW-COST APARTMENTS

THIS PLAN OCCURS WHERE TWO TYPE B FOUR-ROOM APARTMENTS ADJOIN AND MAY BE SERVED BY THE SAME STAIR.



TYPE "B" 4 ROOM APTS.

0 5 10 15 20 25 30

The quotations on this and the following seven pages are from an address given by Walter R. McCornack before the National Conference on Low-Cost Housing, held in Cleveland, October 25-27, 1933:

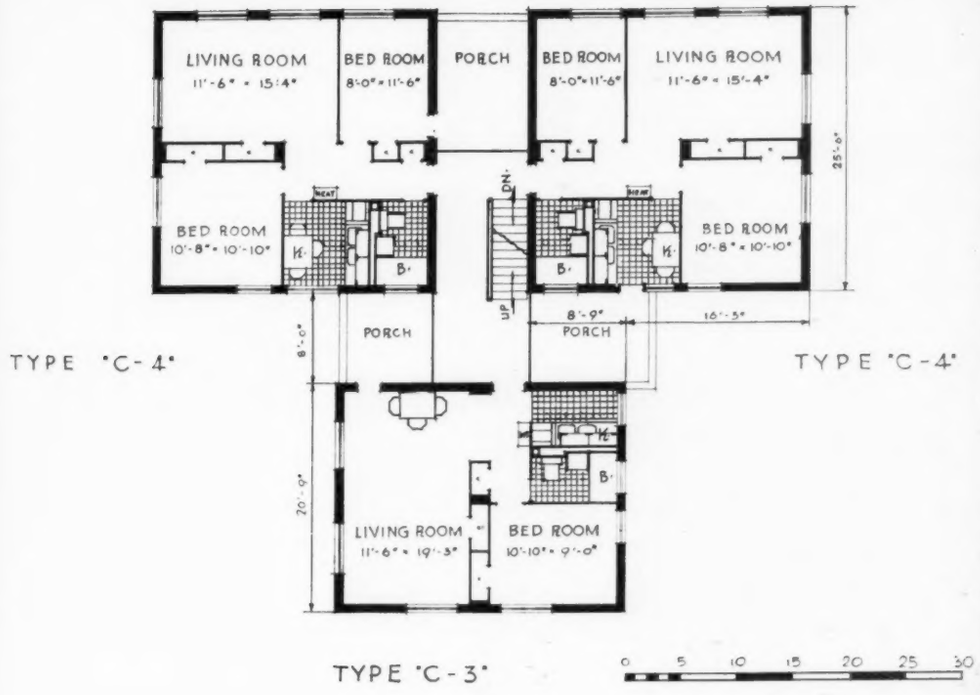
"On the basis of the data we have in Cleveland, low-cost housing must range from $1,200 to $3,000, which is high; preferably $2,500 should be the total cost to meet the incomes of the people who must live in these homes."

Views at bottom of pages 108–113 show existing structures on site of proposed housing.

CLEVELAND HOUSING

LOW-COST APARTMENTS

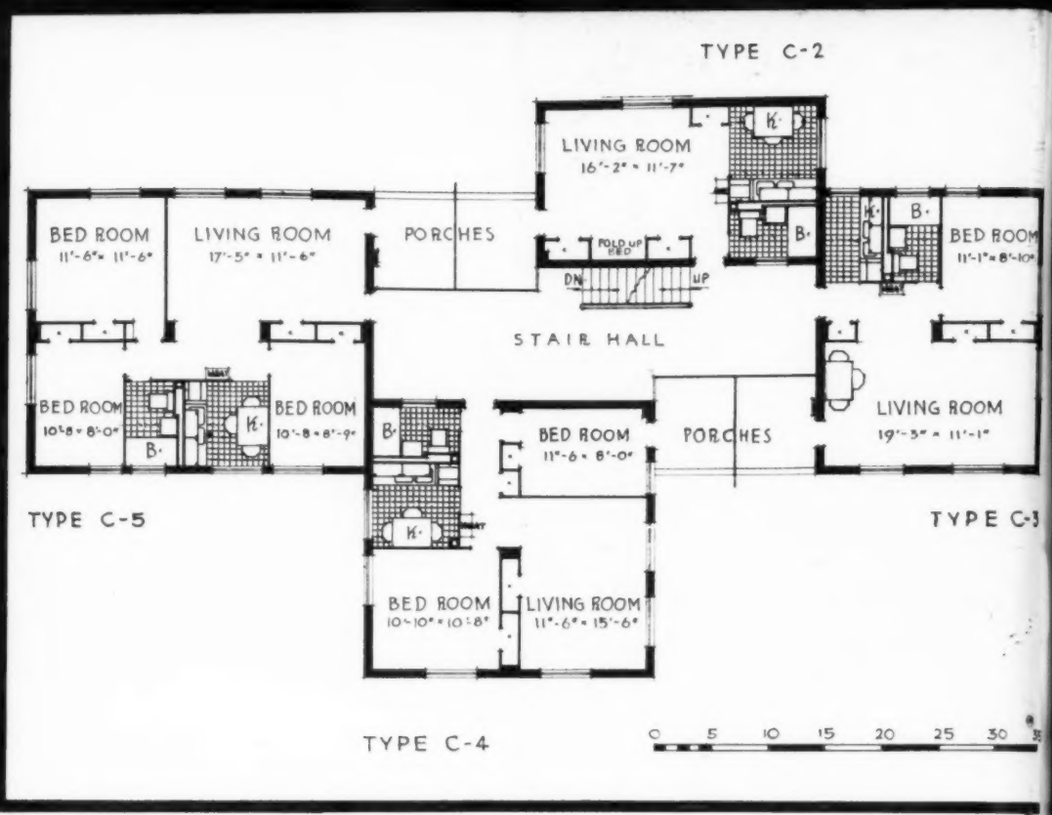
THIS CROSS PLAN OCCURS AT INTERSECTIONS OF STRAIGHT-RUN APARTMENTS, AND MAKES POSSIBLE LARGE COURT AREAS. THE STAIRWAY SERVES FOUR UNITS, EACH FLEXIBLE AS TO NUMBER OF ROOMS AND EACH CAPABLE OF CONNECTION TO A STRAIGHT-RUN APARTMENT.



"These figures are derived from allowing 20 per cent of the total income to go for shelter. The financing is based on a 10 per cent gross in the case of the higher brackets and an 8 per cent gross for the lower brackets, because in the lower brackets we believe the new Housing Authority will be able to take advantage of the 30 per cent grant and possibly tax exemption."

CLEVELAND HOUSING

LOW-COST APARTMENTS

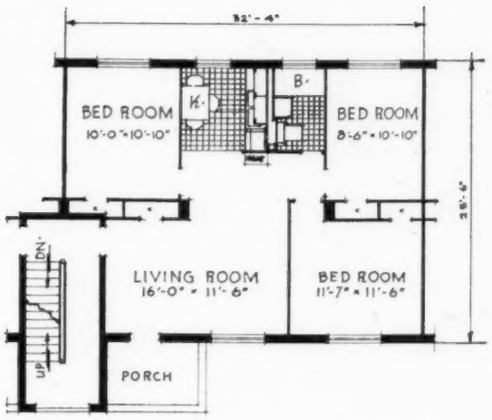


THIS CONDITION OCCURS WHERE ONLY THREE PARTS OF A TYPICAL FOUR-PART CROSS PLAN ARE USED.

"With the survey of the City of Cleveland, which shows twenty-two square miles of blighted area in the city, there is a potential market for low-cost housing of about $300,000,000. It can't be touched under the present conditions—conditions of financing, conditions of land purchase, conditions of actual construction, and whatnot that have made up the old order of construction of homes."

CLEVELAND HOUSING

LOW COST APARTMENTS



TYPE 'A-5'

0 5 10 15 20 25 30

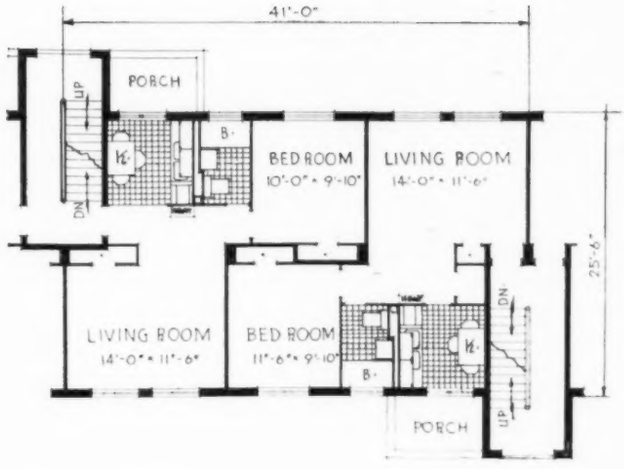
THIS PLAN IS USED WHERE A FIVE-ROOM APARTMENT IS DESIRED. IT MAY BE USED WITH TYPES A, B, D, F AND G, ON THE SAME STAIR, AND ADJACENT TO TYPES A, B, C, F OR G.

"I think the financing is well on the way to be solved. I think the over-supply of land, the necessity for finding a market for those who are hardridden by taxes will eventually solve that problem, but when we figure that the building cost itself is 70 per cent of the total cost of the project, here is a field which we must enter to try to solve the problems."

CLEVELAND HOUSING

LOW-COST APARTMENTS

THIS CONDITION OCCURS WHERE TWO TYPE E THREE-ROOM APARTMENTS ADJOIN, BUT ARE NOT SERVED BY THE SAME STAIR.



TYPE 'E' 3 ROOM APTS.

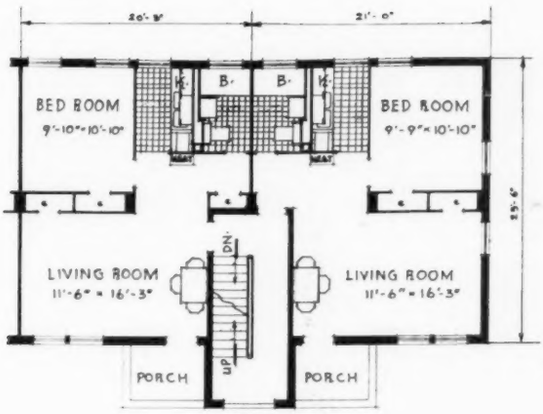
0 5 10 15 20 25 30

"Cleveland Homes, Inc., consists of a group of architects, contractors and others who are all interested in solving this problem. There will be in one of the sections of that development two experimental buildings, one in the city and one outside the city."

CLEVELAND HOUSING

LOW-COST APARTMENTS

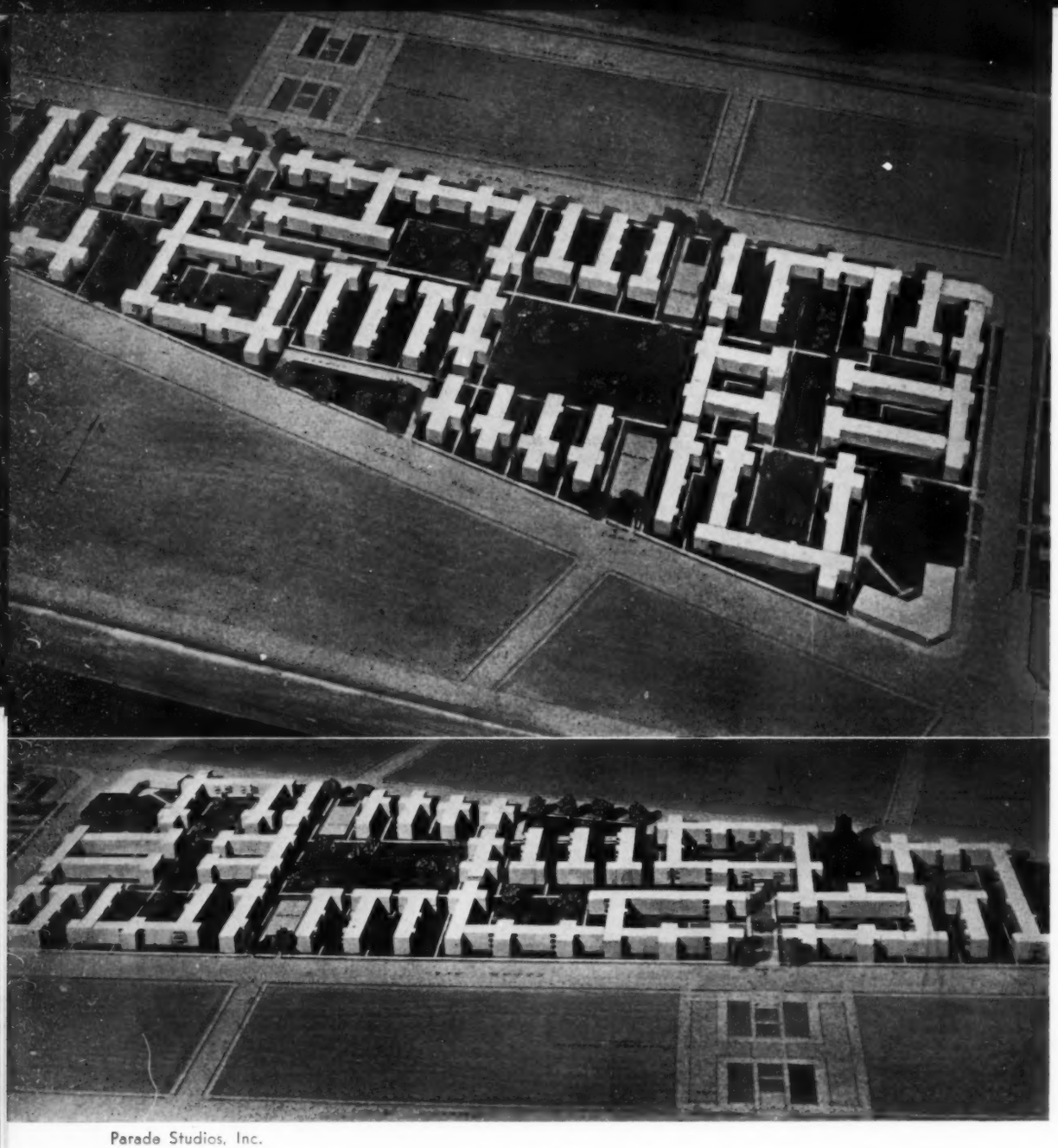
THIS PLAN IS USED WHERE A THREE-ROOM APARTMENT IS DESIRED TO COMPLETE AN END OF THE BUILDING, OR TO BE ADJACENT TO TYPES A, B, C AND F.



TYPE "F" 3 ROOM APARTMENTS

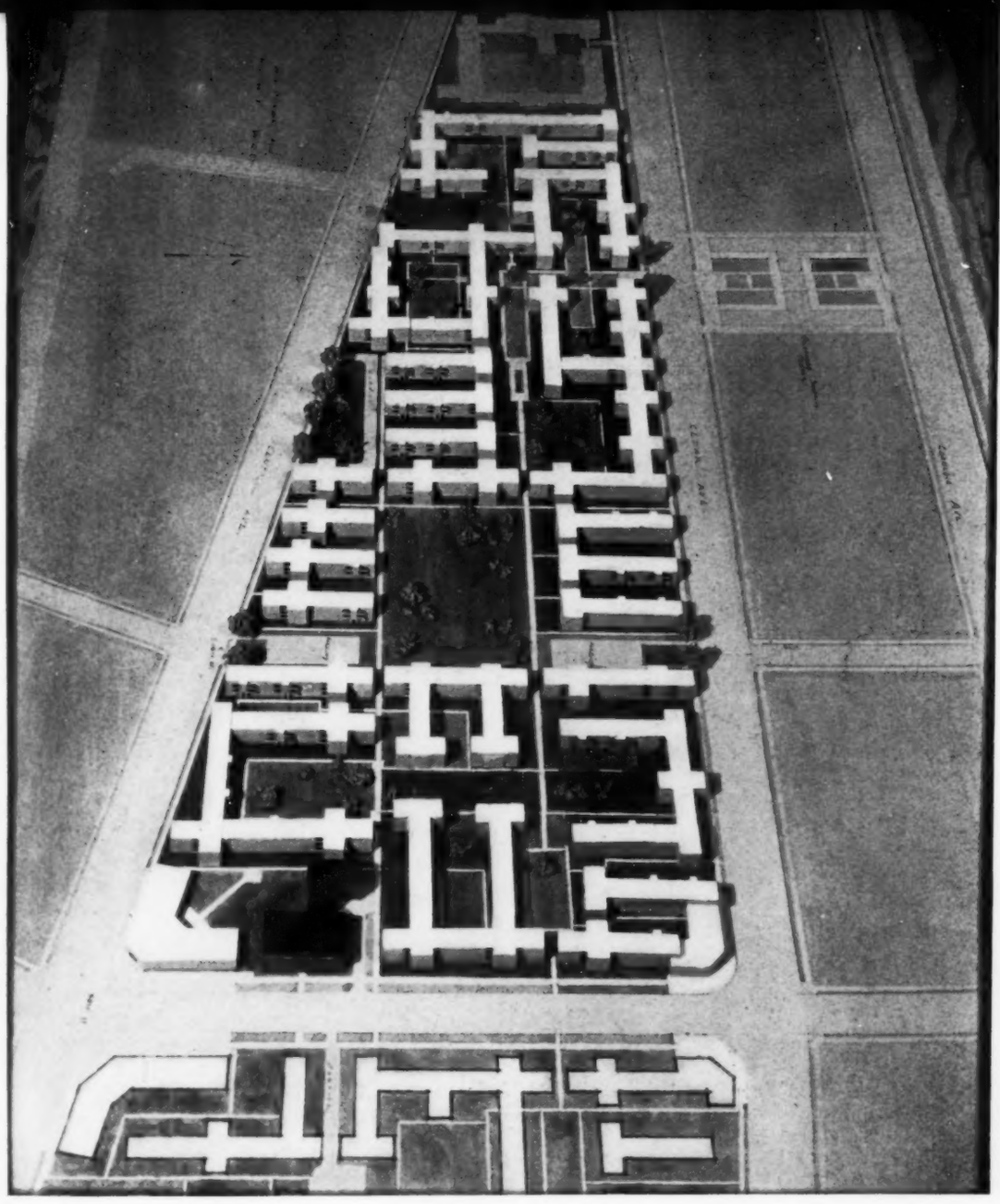
0 5 10 15 20 25 30

"The experimental building in the city will be a definite attempt to bring the cost of that building, including the land and all other charges, to $2,500 per unit, which at a 10 per cent gross for a five-room apartment will produce $4 per month rental per room."



Parade Studios, Inc.

"The other development is the problem that we must solve in taking care of those who, we must admit, will be eliminated from the downtown area. In other words, houses for people who should live in the country. The proposal for the removal of these people from the center of the city is that we shall findin the surrounding territory such land and such location as will not be injurious to the residents now living there; that we will provide part of the labor by the people themselves; that the land cost will be only about one and one-half cents a square foot as against seventy cents in Cleveland; that instead of building individual houses on individual lots, 20 or 30 or 40 by 110 feet long, we will put two or three lots together for a family and produce from one-fifth to one-quarter of an acre with a chicken run and vegetable garden. With occasional work we believe the family can be self-supporting or pretty close to it."



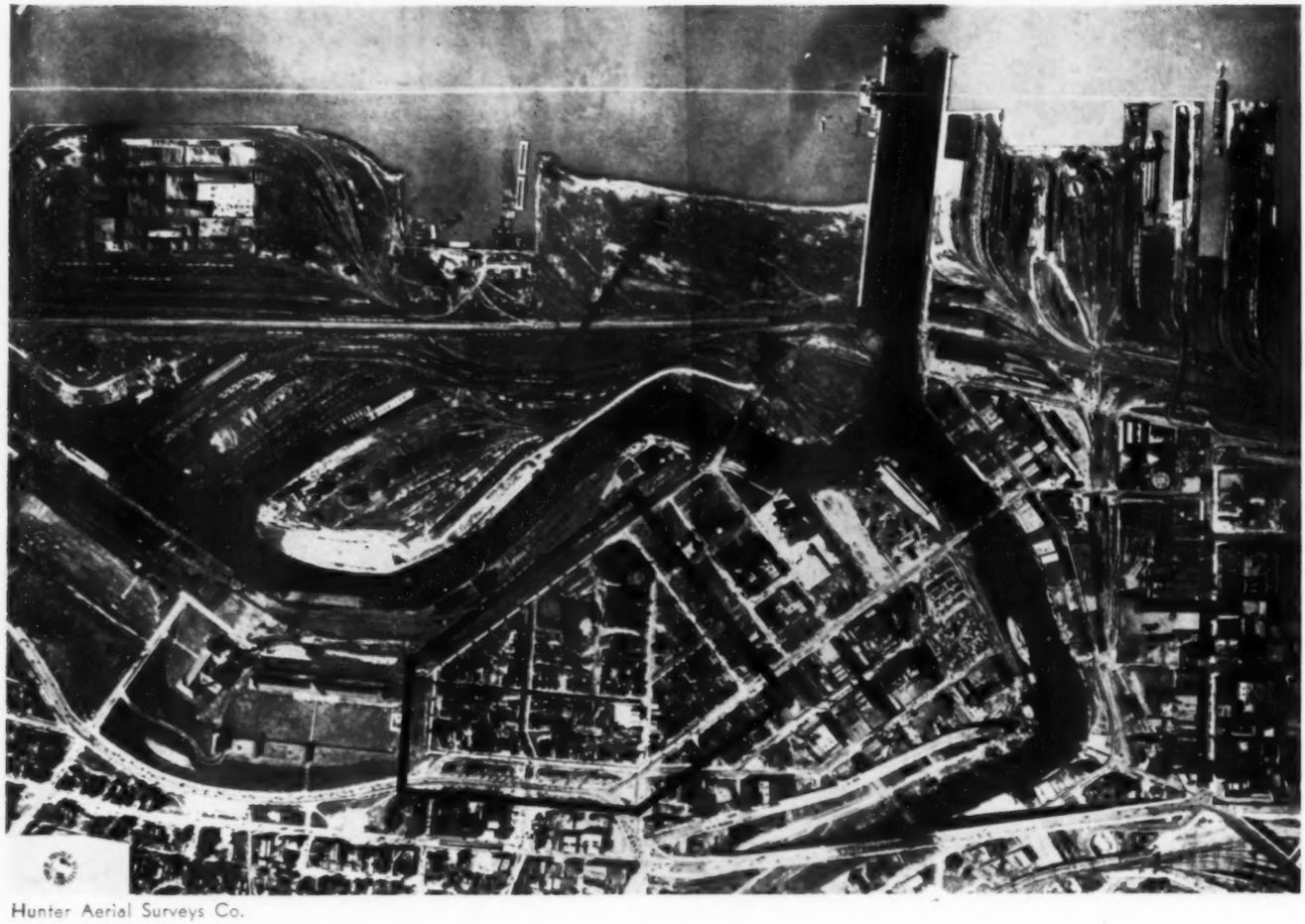
Photographs of Models
of
CLEVELAND HOMES,
INC.

WALTER R. McCORNACK
Architect

"We have set a definite area for that group and are working on different types of construction. We have fixed the price of the land and building and other charges at $1,200. I think we will reach some of these ideals for which we are struggling.

"In the case of the town apartment house, it is a question of providing minimum area for bedrooms and a maximum area for living rooms. In other words, why should the harassed woman of the house, who has to work, find it necessary to take care of huge bedroom areas? Instead of having 170 square feet per room we will reduce that to 100 and yet provide ample, well-ventilated rooms. We are planning the bedrooms with the idea of a tip-up bed so the areas in these rooms will be available for sewing or play of small children during the daytime.

"Summarizing the problem, there is necessary: first, to reduce the total area and total cubage; second, to find all the new types of building materials which seem to point to the solution of a $2,500 five-room house that can be rented for $4 a room; then to carry the same idea to the edge of the city and attempt an experiment there along the same lines."

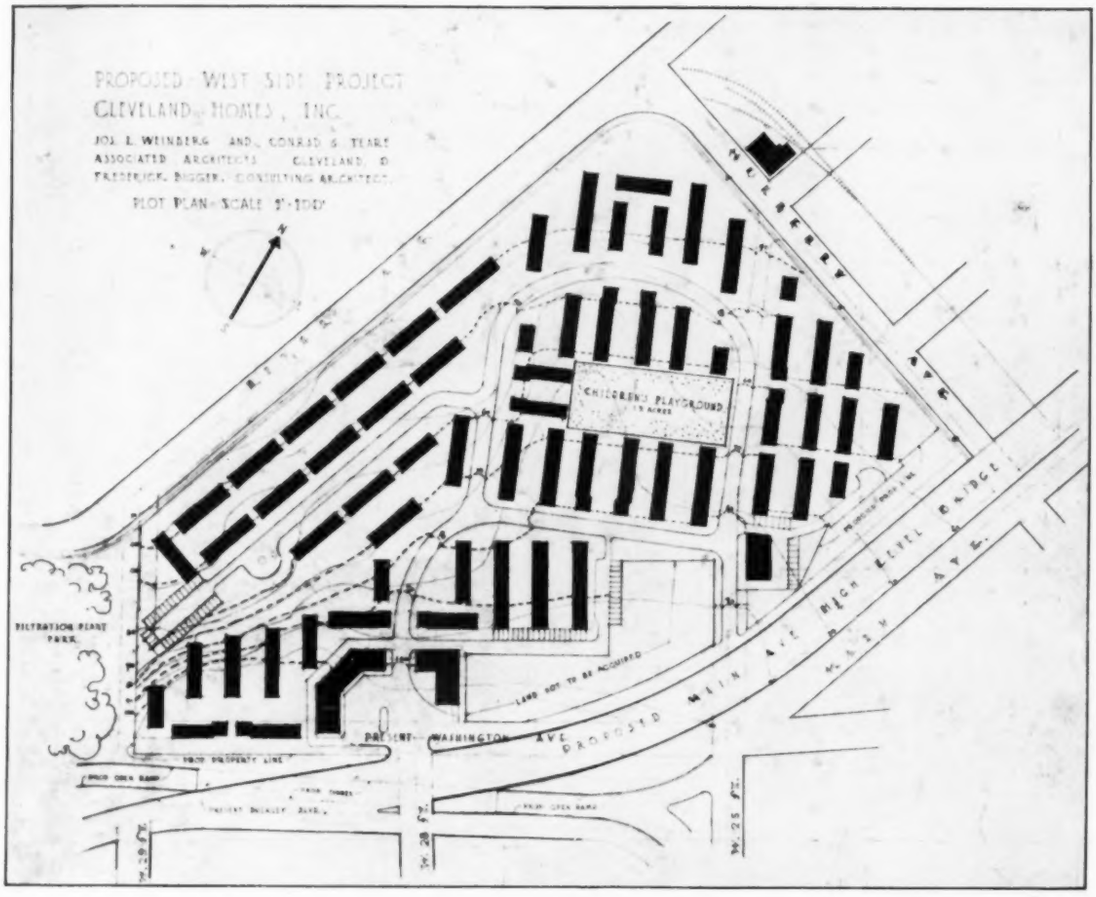


Hunter Aerial Surveys Co.

AIR VIEW OF SITE OF PROPOSED WEST SIDE DEVELOPMENT

The West Side project will occupy 22 acres, options on 95 per cent of which have been obtained. The site is bounded by Washington and Main Avenues on the south, River Avenue on the north, Mulberry Avenue on the east and West 29th Street on the west.

The project has been designed by the architects, Joseph L. Weinberg and Conrad and Teare, for 675 families housed in 2,600 rooms. There will be two types of housing—row housing and apartments. The row housing will be two stories high, with suites of four to six rooms. Living rooms will be on the first floor and bedrooms on the second. The apartments will be two to three stories high, with three to five rooms in the suite. In some instances there will be a dinette in addition.

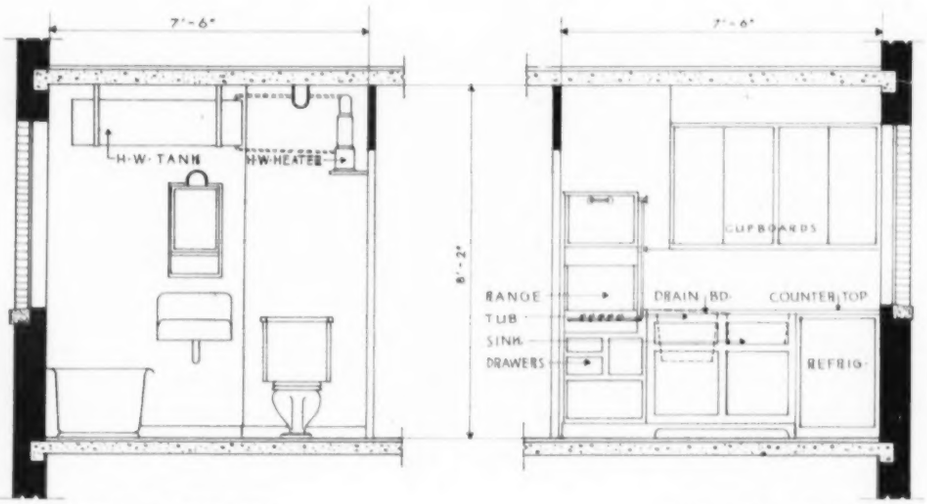


HOUSING PROJECT No. 4 — CLEVELAND HOMES, INC.

(See map on page 104)

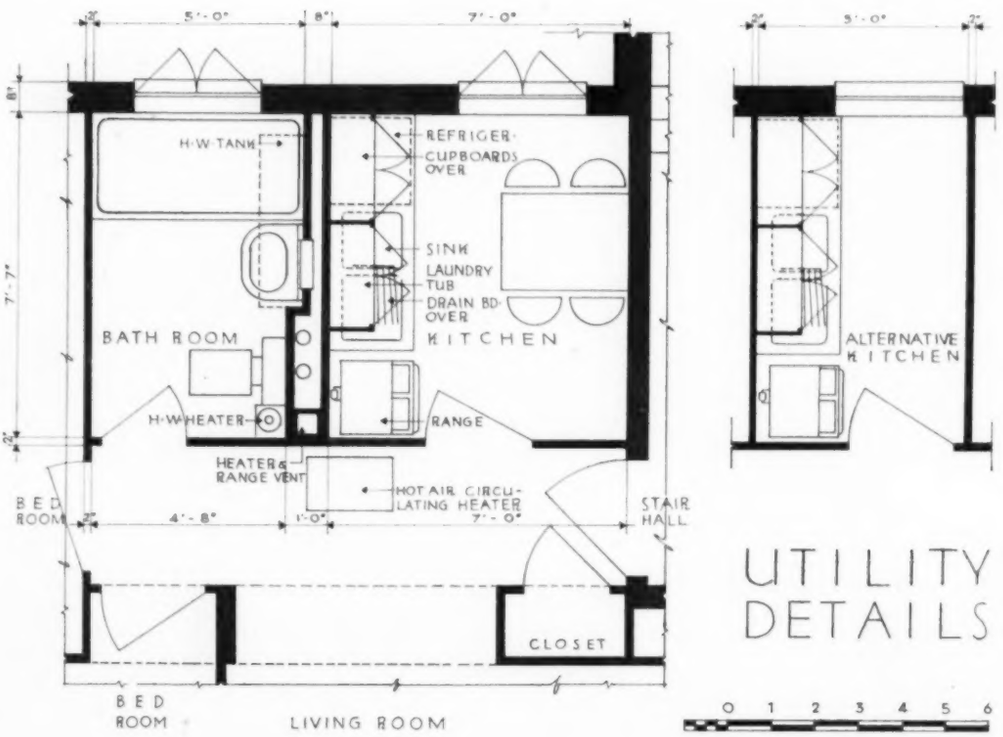
All units will have basements for the individual families. In the row housing each family will have an individual garden, with at least 50 feet between each house.

Gardening by the occupants will be emphasized. Only 26½ per cent of the entire area will be built up. The remainder will be open space. Included in the open space will be a 1½-acre playground for small children and a site for a future community center. The houses will be orientated to the best advantage with respect to sunlight and the grading of the land. Buildings will all be fireproof, with brick exterior, wood-covered concrete floors and concrete roof construction.



BATHROOM ELEVATION

KITCHEN EQUIPMENT



UTILITY DETAILS

0 1 2 3 4 5 6

CLEVELAND HOMES, INC.
WALTER R. McCORNACK, ARCHITECT

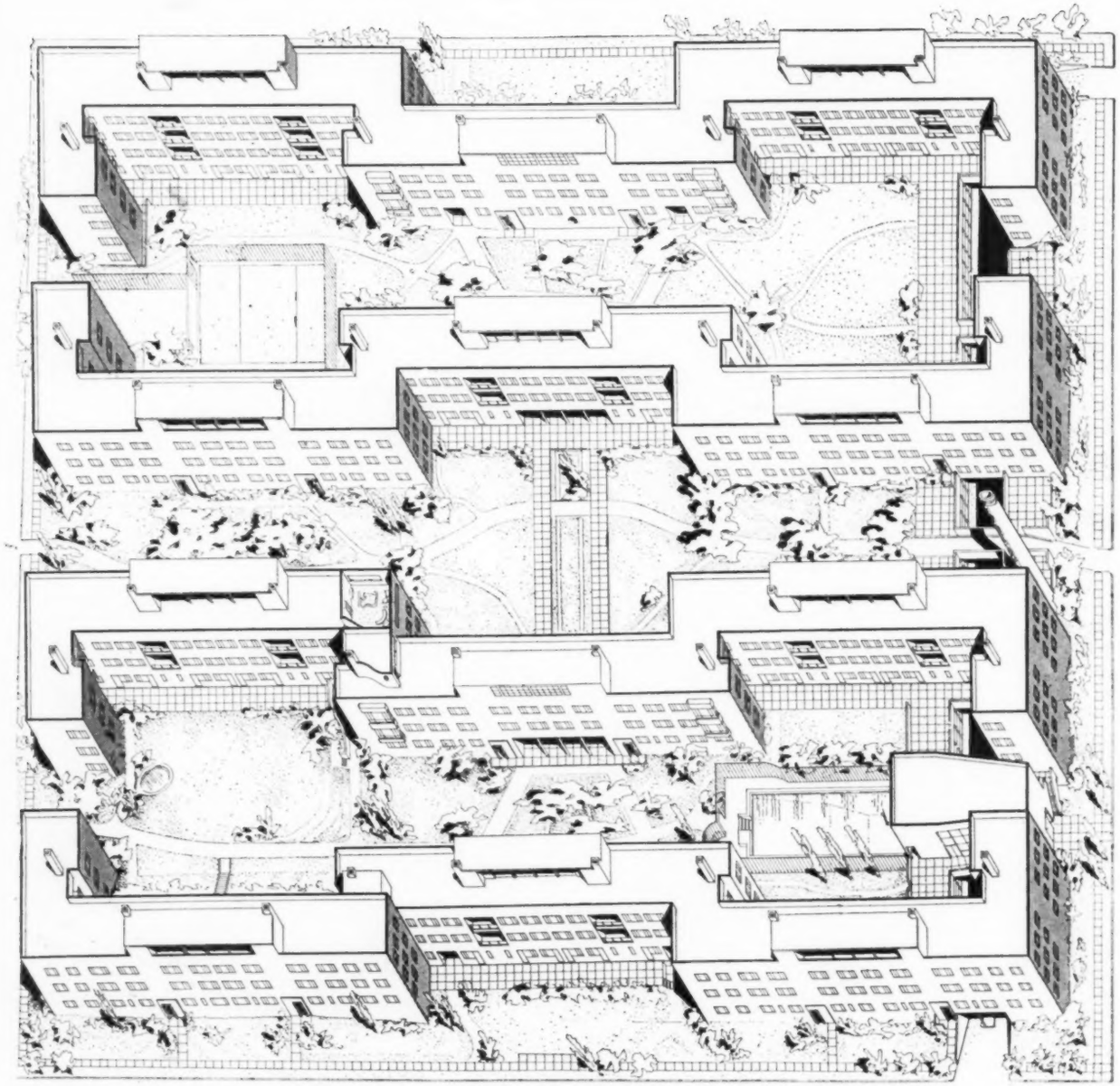
HOUSING PROJECT UNDER WAY

The Public Works Administration has loaned $1,000,000 to a limited dividend corporation for the construction of a low-cost housing project at Euclid, Ohio. The house illustrated at left is one of a group nearing completion. The houses contain five and six rooms, and are built on lots 50 feet wide.

HILL CREEK HOMES—PHILADELPHIA

THOMAS AND MARTIN, ARCHITECTS

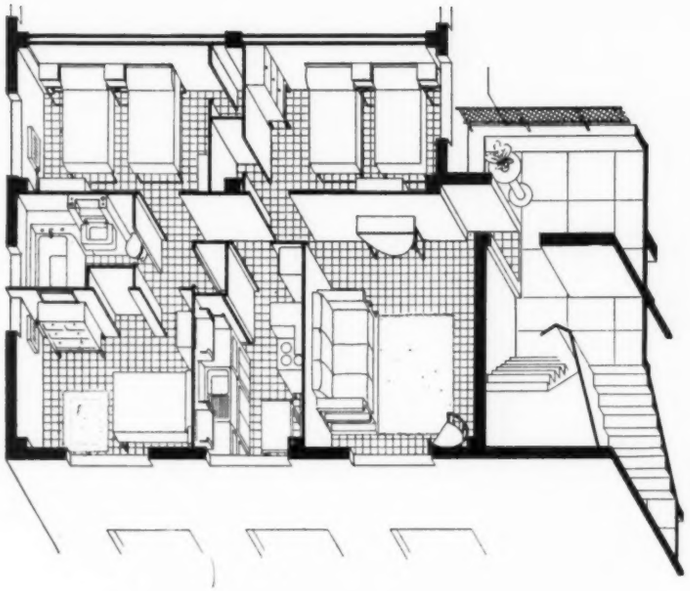
The buildings will consist of six-room residences and three-story apartments providing 1,620 rooms and it is hoped that the low rental of $7.50 per room may be attained. The site is adjacent to the Tacony Creek Park, within walking distance of an extensive industrial area, and approximately six miles from the City Hall.



CARL MACKLEY HOUSES—PHILADELPHIA

KASTNER AND STONOROV; W. POPE BARNEY, ARCHITECTS

The community is to be at Cayuga and M Streets, opposite the Juniata Park Golf Course. Ample shrubbery and trees will make the garden a continuation of the adjacent park. The four main buildings take up the entire block, 480 by 490 feet. Each unit is three stories high and is separated from the next by a park area varying from 72 to 131 feet in width. Each building is 30 feet wide and extends 480 feet, the full length of the block. Each apartment has cross-ventilation; each contains a porch. In all, there are 272 apartments. There will be a community buying league or club, in effect a store without profits, selling only to persons within the apartments. This store will also handle milk and bread concessions within the community, enabling those who wish to buy necessities at less than possible otherwise. There will be a swimming pool 30 by 75 feet with a diving board and a sand beach, in connection with an auditorium where meetings, movies or dances may be held.



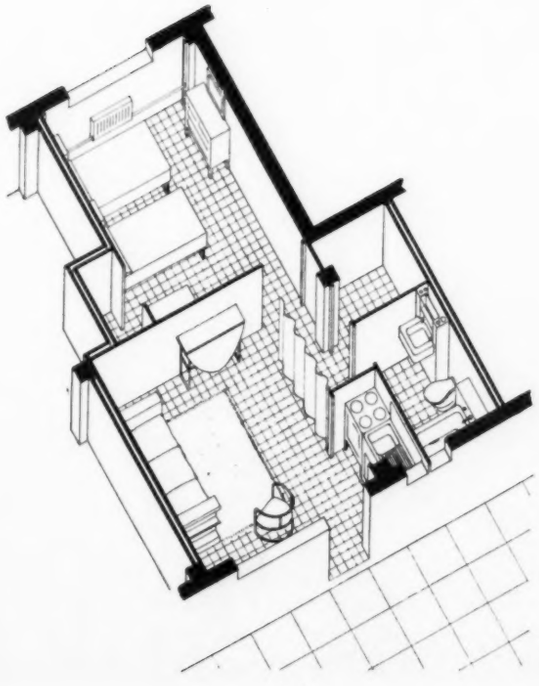
CARL MACKLEY HOUSES

A COMMUNITY DEVELOPMENT FOR HOSIERY WORKERS IN PHILADELPHIA

KASTNER AND STONOROV
W. POPE BARNEY, ARCHITECTS

26% OF TOTAL APARTMENTS ARE LIKE THIS TYPICAL FIVE-ROOM SUITE.

45% OF APARTMENTS ARE LIKE THIS TYPICAL FOUR-ROOM SUITE



29% OF TOTAL APARTMENTS ARE LIKE THIS TYPICAL 2½-ROOM SUITE.

KNICKERBOCKER VILLAGE HOUSING PROJECT

SLUM CLEARANCE UNDER WAY ON LOWER EAST SIDE OF NEW YORK CITY

FRED F. FRENCH COMPANIES, BUILDERS

WHAT HAPPENED TO 386 FAMILIES WHO VACATED A SLUM TO MAKE WAY FOR A HOUSING PROJECT

A Study Conducted by Fred L. Lavanburg Foundation and Hamilton House

The study was undertaken to provide factual information bearing on the following questions: Do people unhoused by slum-clearance projects move to better or worse sections of the city or do they move into adjoining blocks where the same kind of housing facilities are found? Is it a matter of choice or does the income determine this move? Where do the heads of these families work—near their homes or at a distance?

Opportunity for investigating these and related questions arose in March, 1933, when Fred F. French announced plans to build a model housing development, to be known as Knickerbocker Village, on the lower East Side of Manhattan with funds obtained from the Reconstruction Finance Corporation. The area involved comprised the two blocks bounded by Catharine, Market, Cherry and Monroe Streets, one of which had been characterized in 1903 by Robert W. de Forrest, then Tenement House Commissioner, as so bad that "every consideration of public health, morals and decency requires that the buildings on this block be destroyed at an early date."

The buildings on the two blocks contained in March, 1933, a total of 1,085 apartments—652 vacant and 433 occupied. The occupants of 47 apartments refused to be interviewed or for other reasons were not included in the study, which embraced 386 families, the term "family" being used in the sense of household, conforming with the definition employed by the Federal Census.

Albert Rothschild

Progress photograph showing site cleared of slum dwellings.

KNICKERBOCKER VILLAGE HOUSING PROJECT

Proposed new apartments.

About 10 per cent of the families had their apartments rent free in return for janitor service and about 88 per cent paid $2 to $7 a room a month. The findings of the investigation are summarized as follows by Abraham Goldfeld, executive director, Fred L. Lavanburg Foundation, and Lillian D. Robbins, headworker, Hamilton House:

1. The great majority of tenants expressed a desire to remain in the immediate neighborhood and when forced to vacate only fourteen per cent left the district, eighty-six per cent settling in the adjoining blocks.
2. Most of the families have been residing in the neighborhood for a long period of time and many of the wage earners work within walking distance.
3. Only 97 out of 386 families had hot water in their flats before moving.
4. 119 families had private toilets in their flats.
5. Only 25 out of 386 had bathing facilities.
6. Not one single family enjoyed the luxury of steam heat.
7. In the new flats there has been some improvement as to physical facilities, notably an increase in the number of bath tubs and private toilets.
8. Though almost all the families desire to move into Knickerbocker Village only a small number will be able to pay the higher rental under present conditions.
9. 319 families (83 per cent) continue to live in Old Law Tenements, declared to be unfit for human habitation by the Tenement House Commission as early as 1900. Of this number 35 families live in remodeled Old Law Tenements.

The report consists almost entirely of statistical tables, dealing with such topics as composition of families, length of residence in same apartment, length of residence in neighborhood, religion, nationality, citizenship, number of children, school attendance, unemployment, occupation, rentals before and after moving, number of rooms before and after moving, types of flats, toilets, heating, lighting, hot water, bath tubs and so on. Not the least valuable feature of the report is a complete reproduction of the questionnaire employed.

One of the most controversial questions pertaining to slum clearance is this: Are the low-income groups to be rehoused on the same land regardless of its value or in districts where land is less expensive? On this fundamental problem definite conclusions have been impossible, in the absence of factual information. This investigation supplies such information with respect to a particular area, group and period in an economic depression. Other investigations of a similar nature are needed and seem likely to be made in connection with rehousing projects under way in many cities. In order that the information obtained may be comparable on as many items as possible, it is hoped that the present initial study will become widely known.

The Hillside Housing Corporation project in the Bronx, New York City. The Public Works Administration has entered into a contract with the Hillside Housing Corporation for a loan of $5,060,000 to assist in financing the erection of 108 four-story walk-up units and 4 six-story elevator apartments, providing 4,934 rooms in all.

Van Anda

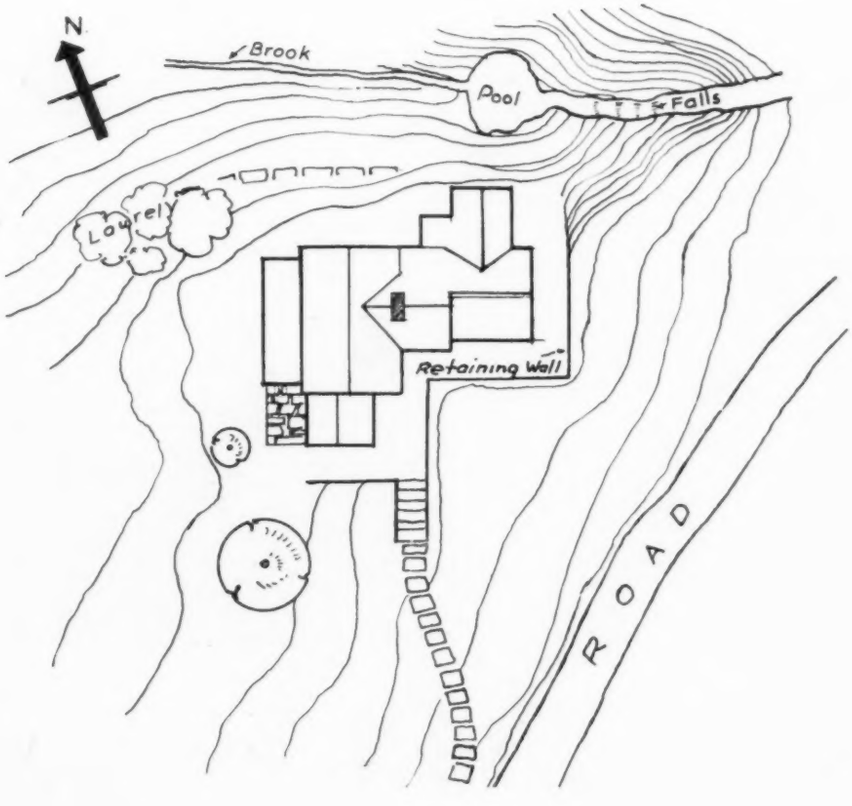
HOUSE OF MRS. HAROLD LLOYD
WESTPORT, CONNECTICUT

HARRY KOERNER, ARCHITECT

PORTFOLIO of SMALL HOUSES

Van Anda

The home was planned to take advantage of the views from the living room; the most desirable bedroom overlooks a falls in the brook about 50 feet away. There were some exceptionally fine clumps of laurel that had to be preserved. Another controlling factor was an old apple tree with "a silhouette like a Japanese print." As the house is arranged the most has been made of tree, laurel, brook and landscape.



HOUSE OF
DR. PHILIP COOK THOMAS
ALLAN McDOWELL
DESIGNER
PETER GAWEL, BUILDER

Van Anda

The side walls are white shingles with weathered shingled roof. Blinds are jade green. The living room has a reproduction of an old Colonial kitchen fireplace; the walls are vertical boards with molded edges stained to resemble old pine. Broad random width boards on living room floor are painted. Hardware by local blacksmith. All inside doors are made of one thickness vertical molded edge boards with ledgers on back. The bedroom doors are halved so that bottoms can be shut while tops are open.

HOUSE OF
DR. PHILIP COOK THOMAS
ALLAN McDOWELL
DESIGNER
PETER GAWEL, BUILDER

Van Anda

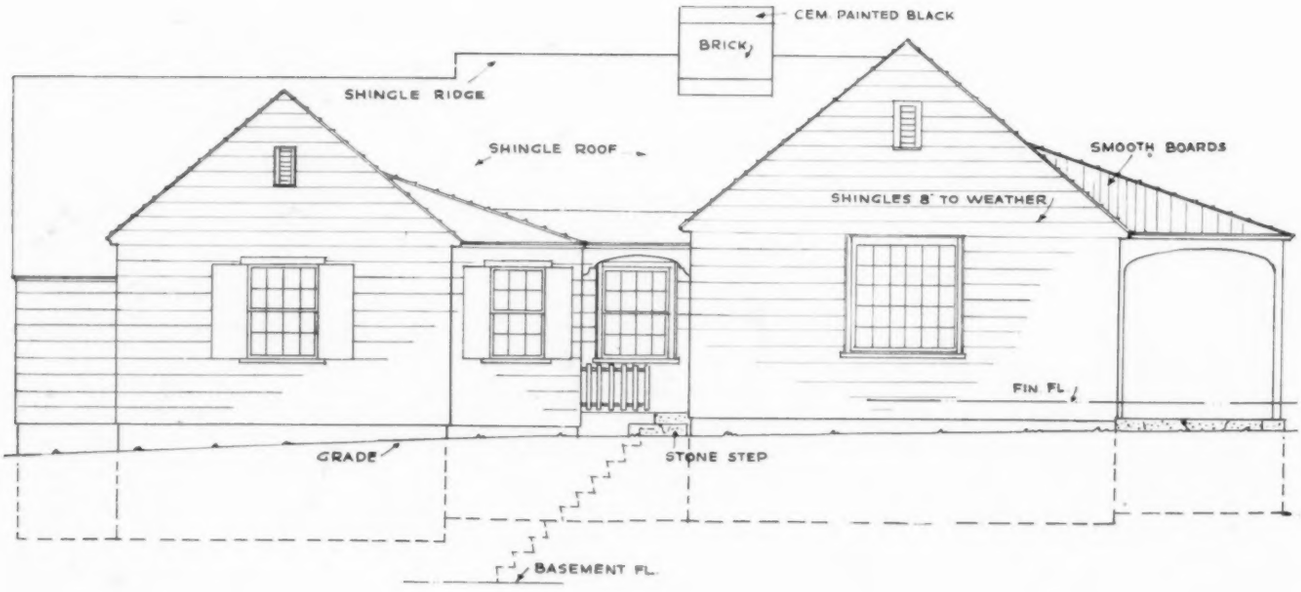
DESIGNED BY ALLAN McDOWELL

HOUSE OF DR. PHILIP COOK THOMAS
KENT, CONNECTICUT

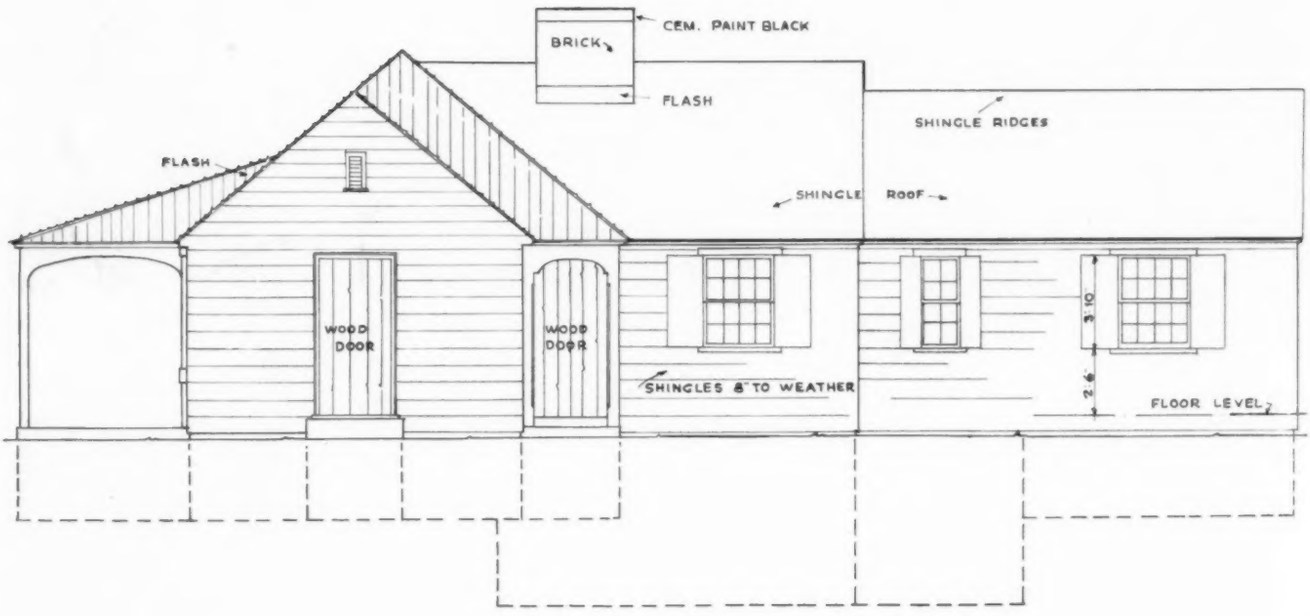
Van Anda

HOUSE OF DR. PHILIP COOK THOMAS
KENT, CONNECTICUT

DESIGNED BY ALLAN McDOWELL



NORTH ELEVATION



ELEVATION

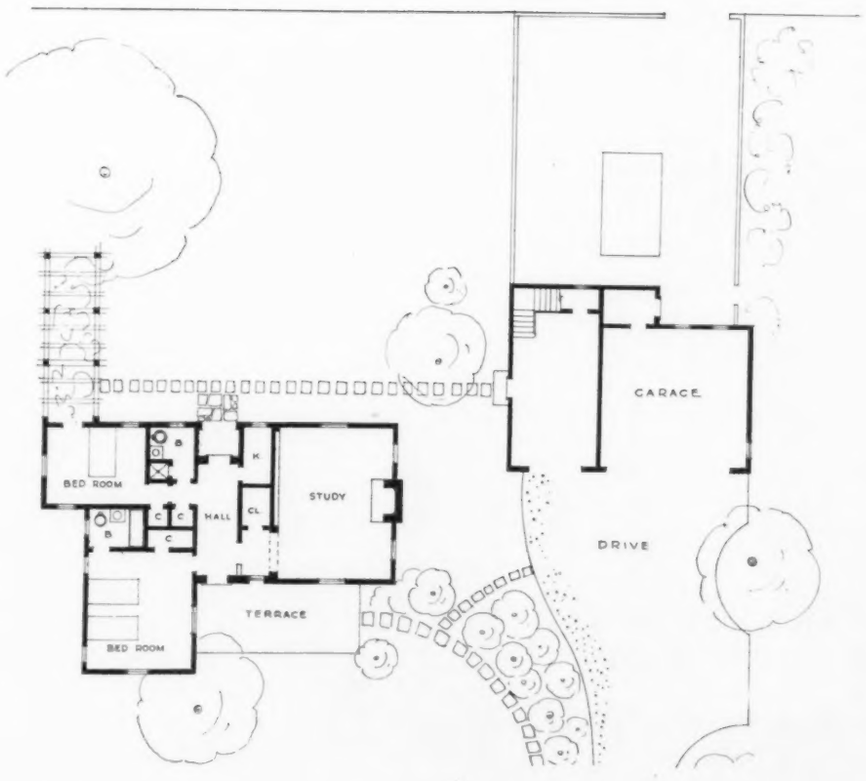
HOUSE OF DR. PHILIP COOK THOMAS
KENT, CONNECTICUT

DESIGNED BY ALLAN McDOWELL
PETER GAWEL, BUILDER

FLOOR PLAN

Mott Studios

The house is situated in the rear of garden, facing the street. The entire exterior, including chimney, is painted white, with green blinds. Shingle roof is weathered gray.



GUEST HOUSE
OF DR. WILLIAM B. MUNRO
PASADENA, CALIFORNIA

JOHN D. ATCHISON
ARCHITECT

Van Anda

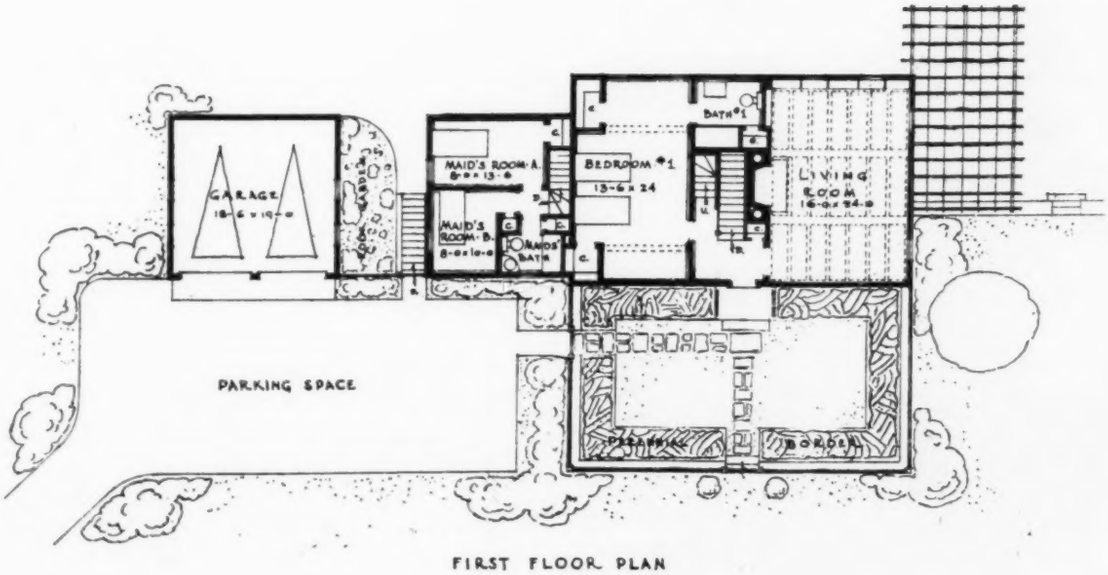
The house was placed on the brow and slope of a hill, enabling the dining room and kitchen to be below the first floor in the space usually designated to cellar. The construction is frame on a concrete foundation. The living room has a wood beam ceiling and pine panel boarding on the fireplace wall and a random width oak floor.

Van Anda

HAMILTON RESIDENCE
NEW CANAAN, CONNECTICUT

WALTER BRADNEE KIRBY
ARCHITECT

Van Anda



FIRST FLOOR PLAN

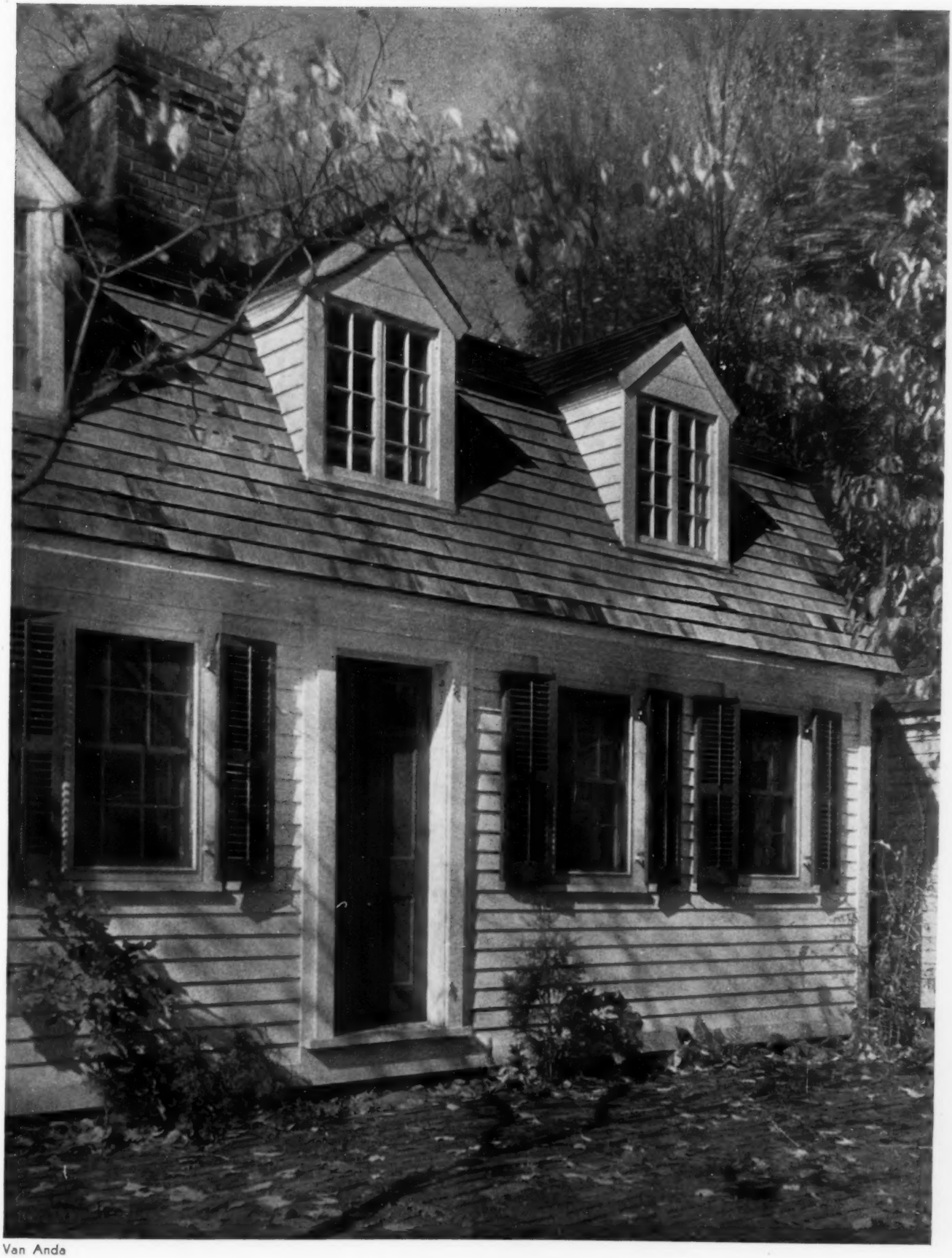
HAMILTON RESIDENCE
NEW CANAAN, CONNECTICUT

WALTER BRADNEE KIRBY, ARCHITECT

Van Anda

WALTER BRADNEE KIRBY, ARCHITECT

HAMILTON RESIDENCE
NEW CANAAN, CONNECTICUT



Van Anda

HOUSE OF LAWRENCE MOORE
WILTON, CONNECTICUT

EVANS, MOORE AND WOODBRIDGE, ARCHITECTS

Van Anda

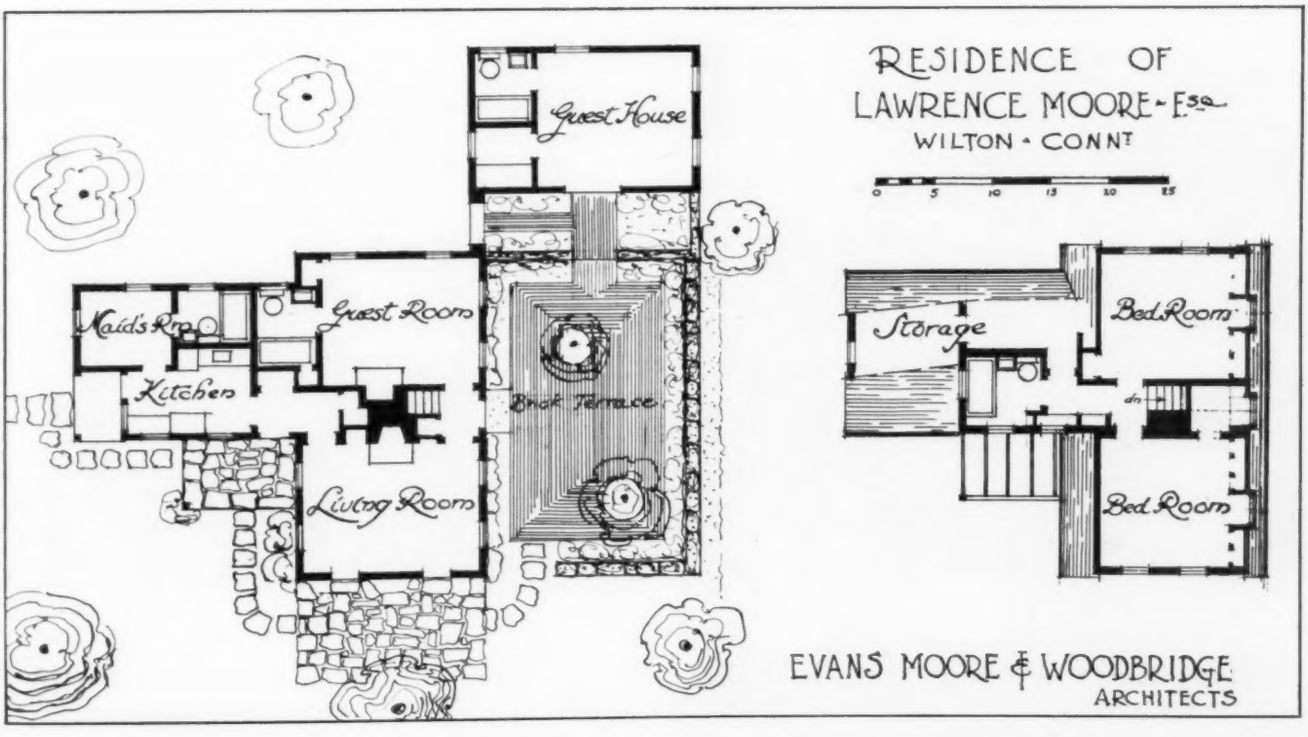
This house was built at various times, beginning in 1927. The guest house was added in 1931 and the kitchen wing was enlarged in 1933. The original house cost about $6,000, and the guest house about $1,000, not including landscape work. The house is frame with clapboard exterior painted white. The walls are insulated with Celotex and the roof with Cabot's Quilt. The house is heated with hot air. It was designed for week-end use.

HOUSE OF LAWRENCE MOORE
WILTON, CONNECTICUT

EVANS, MOORE
AND WOODBRIDGE
ARCHITECTS

Van Anda

Van Anda


RESIDENCE OF
LAWRENCE MOORE - Esq
WILTON - CONNT
0 5 10 15 20 25
Guest House
Maid's Rm
Guest Room
Kitchen
Brick Terrace
Living Room
Storage
Bed Room
dn
Bed Room
EVANS MOORE & WOODBRIDGE
ARCHITECTS

Van Ando

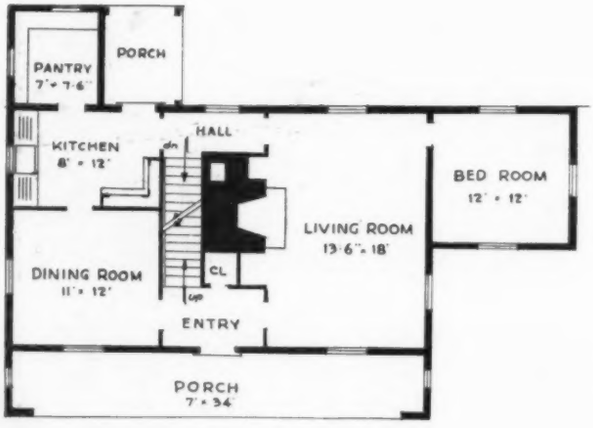
THEODORE VISSCHER AND JAMES BURLEY, ARCHITECTS

STURGES RESIDENCE
SOUTHPORT, CONNECTICUT

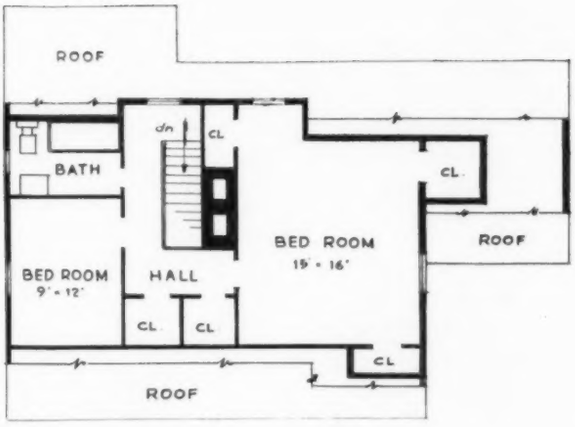
Van Anda

BEFORE AND AFTER VIEWS
REMODELED HOUSE
OF EDWARD B. STURGES
SOUTHPORT, CONNECTICUT

THEODORE VISSCHER AND
JAMES BURLEY, ARCHITECTS



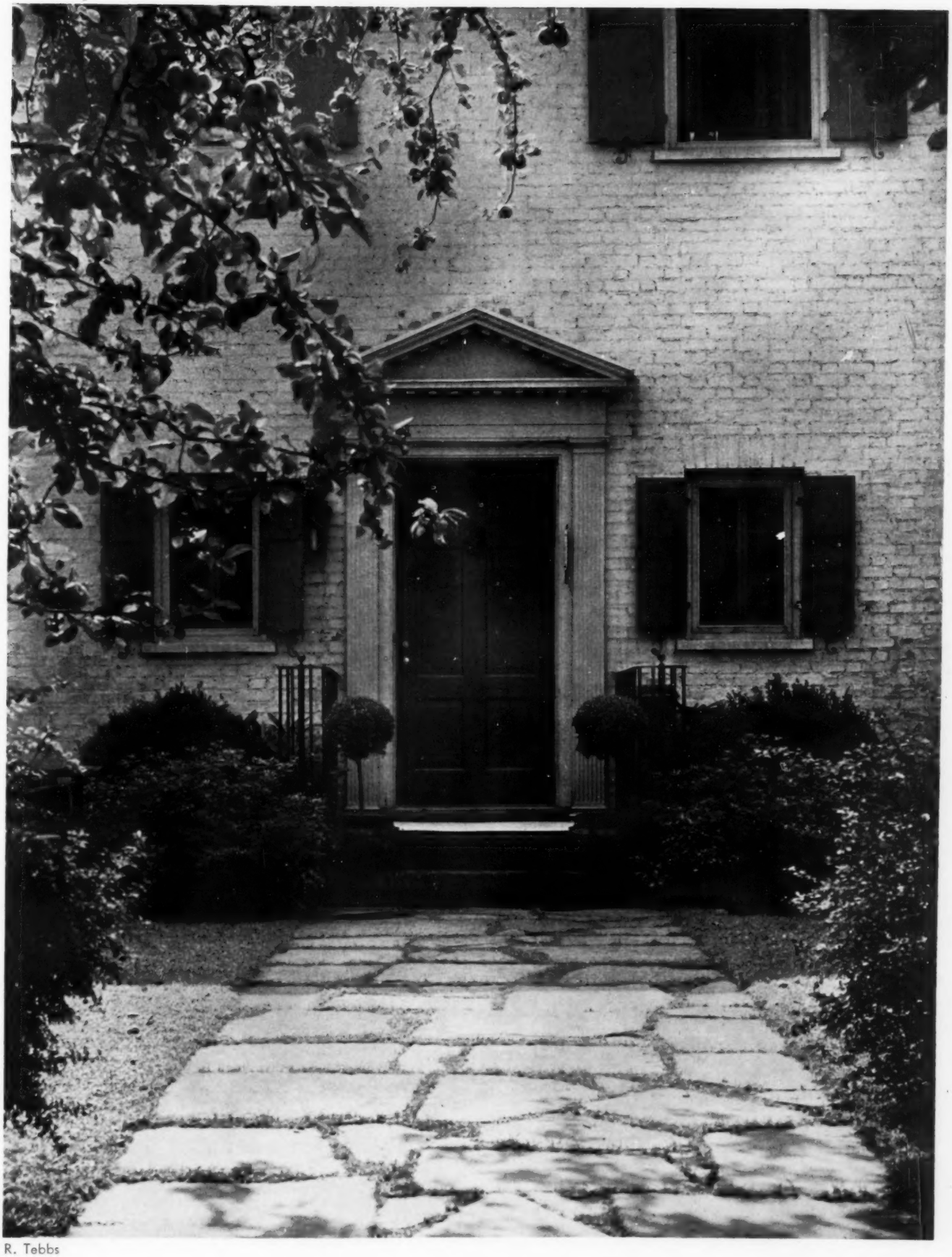
FIRST FLOOR



SECOND FLOOR

DESIGNED BY CHARLES M. RASQUE

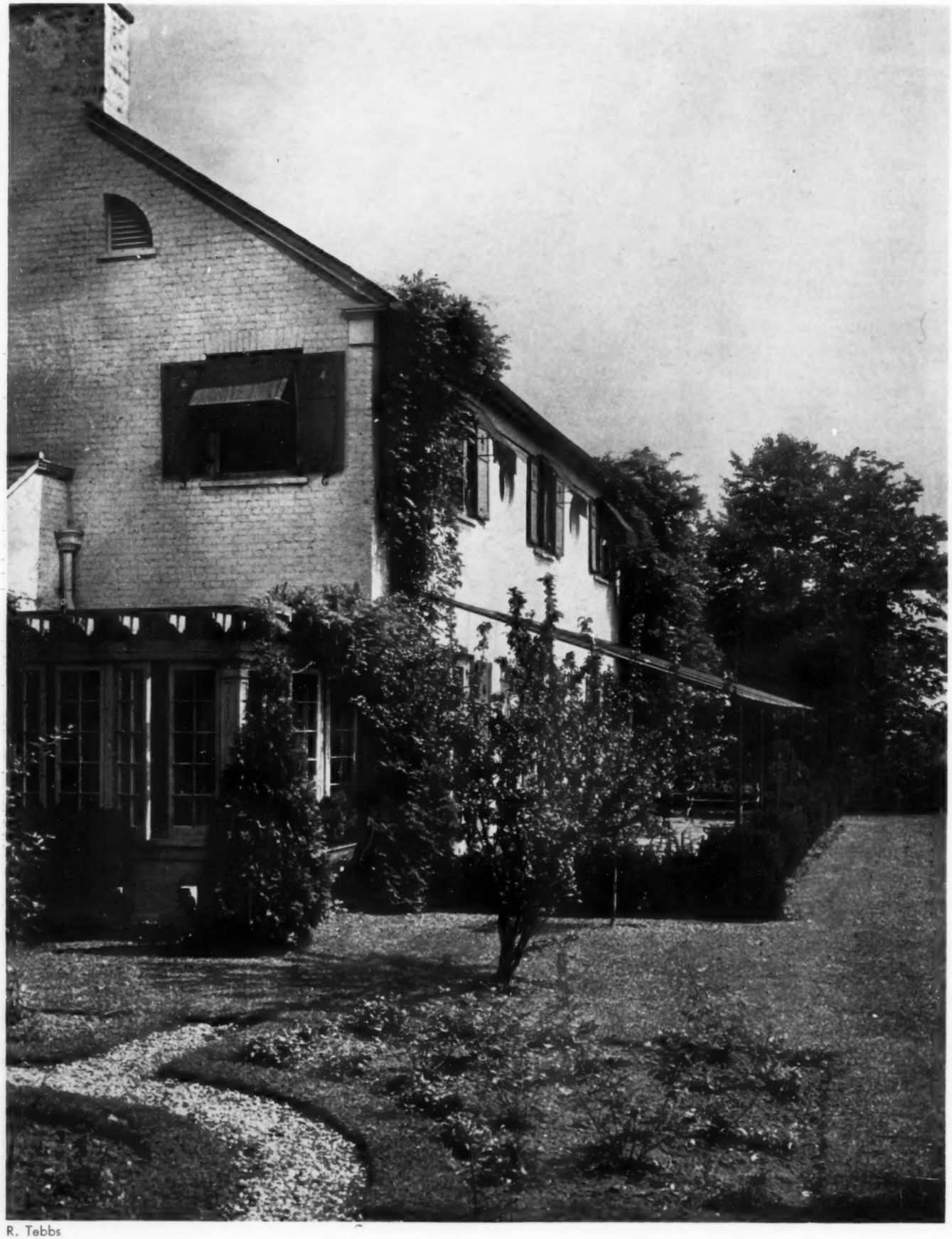
HOUSE OF MRS. ALICE NISBET
KENT, CONNECTICUT



R. Tebbs

HOUSE OF M. L. HOUGH
RYE, NEW YORK

DELANO AND ALDRICH, ARCHITECTS



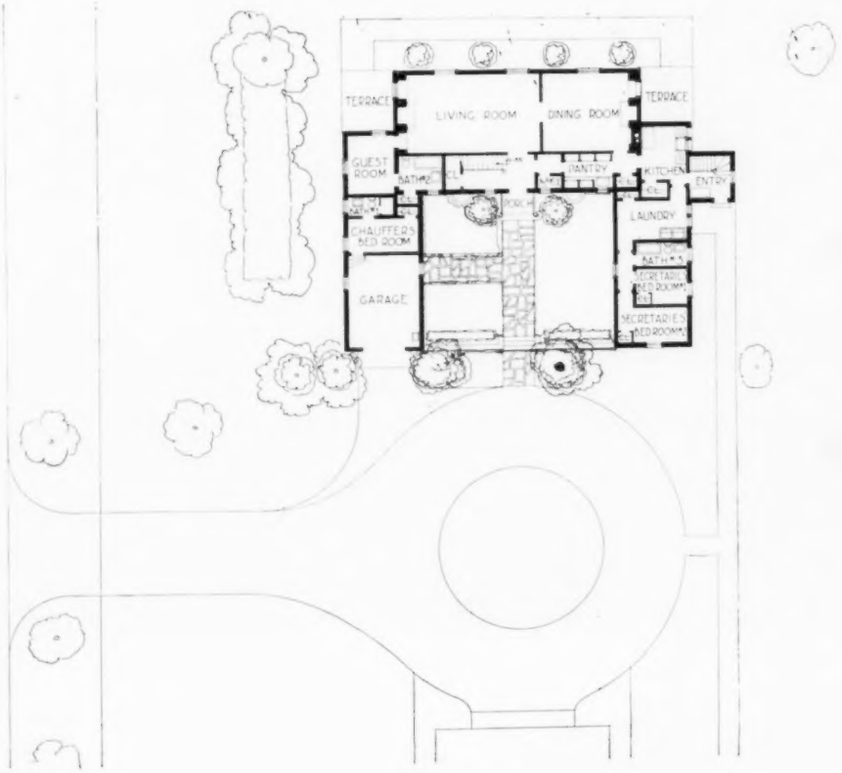
R. Tebbs

DELANO AND ALDRICH, ARCHITECTS

HOUSE OF M. L. HOUGH
RYE, NEW YORK

Van Anda

(Above)
HOUSE OF W. S. WATERBURY
CHAPPAQUA, N. Y.
J. BLAIR MULLER, ARCHITECT

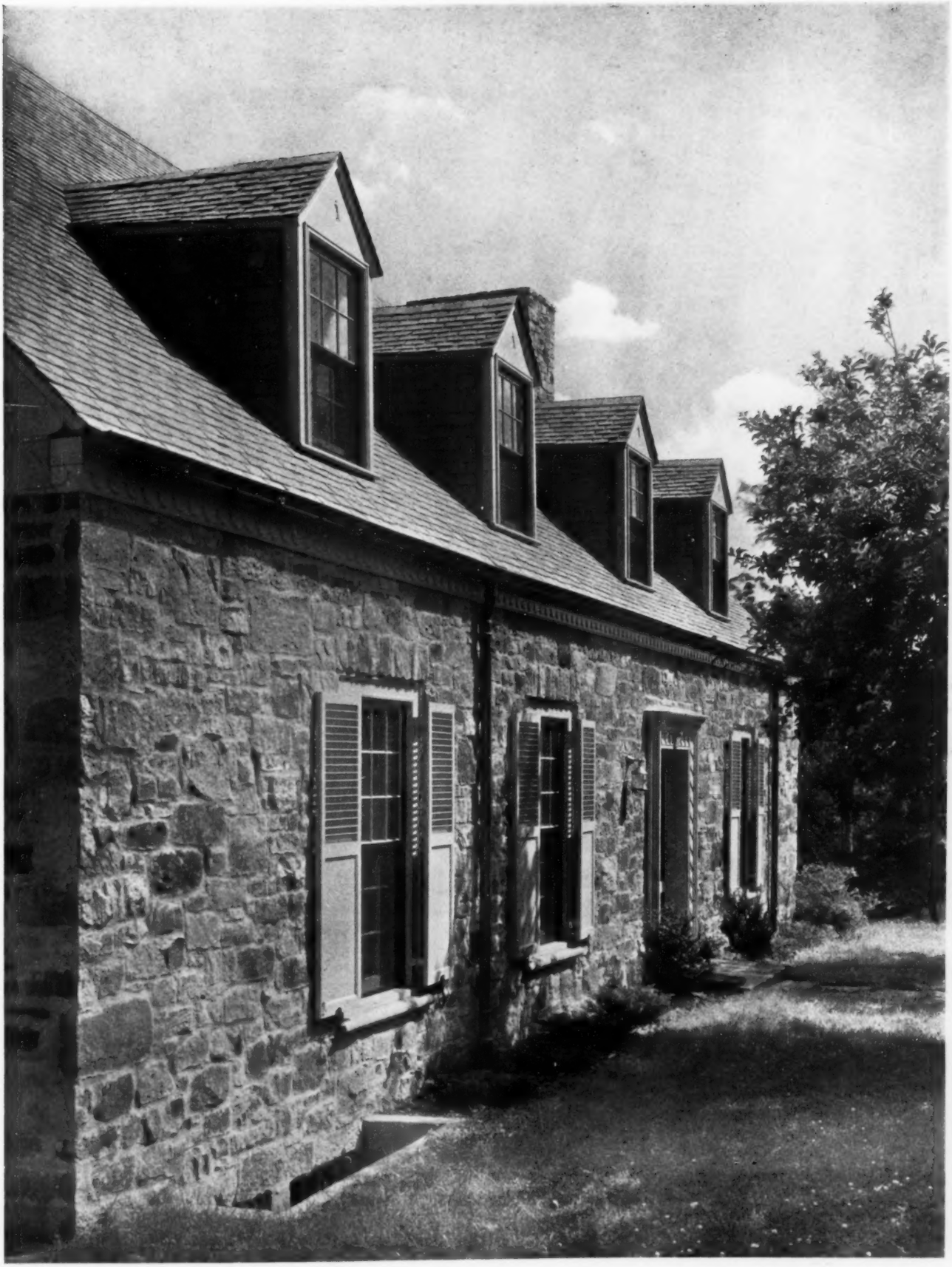


(Left)
PLAN OF HOUGH RESIDENCE
RYE, NEW YORK
DELANO AND ALDRICH
ARCHITECTS

Van Anda

J. BLAIR MULLER, ARCHITECT

HOUSE OF WALTER S. WATERBURY
CHAPPAQUA, NEW YORK



R. Tebbs

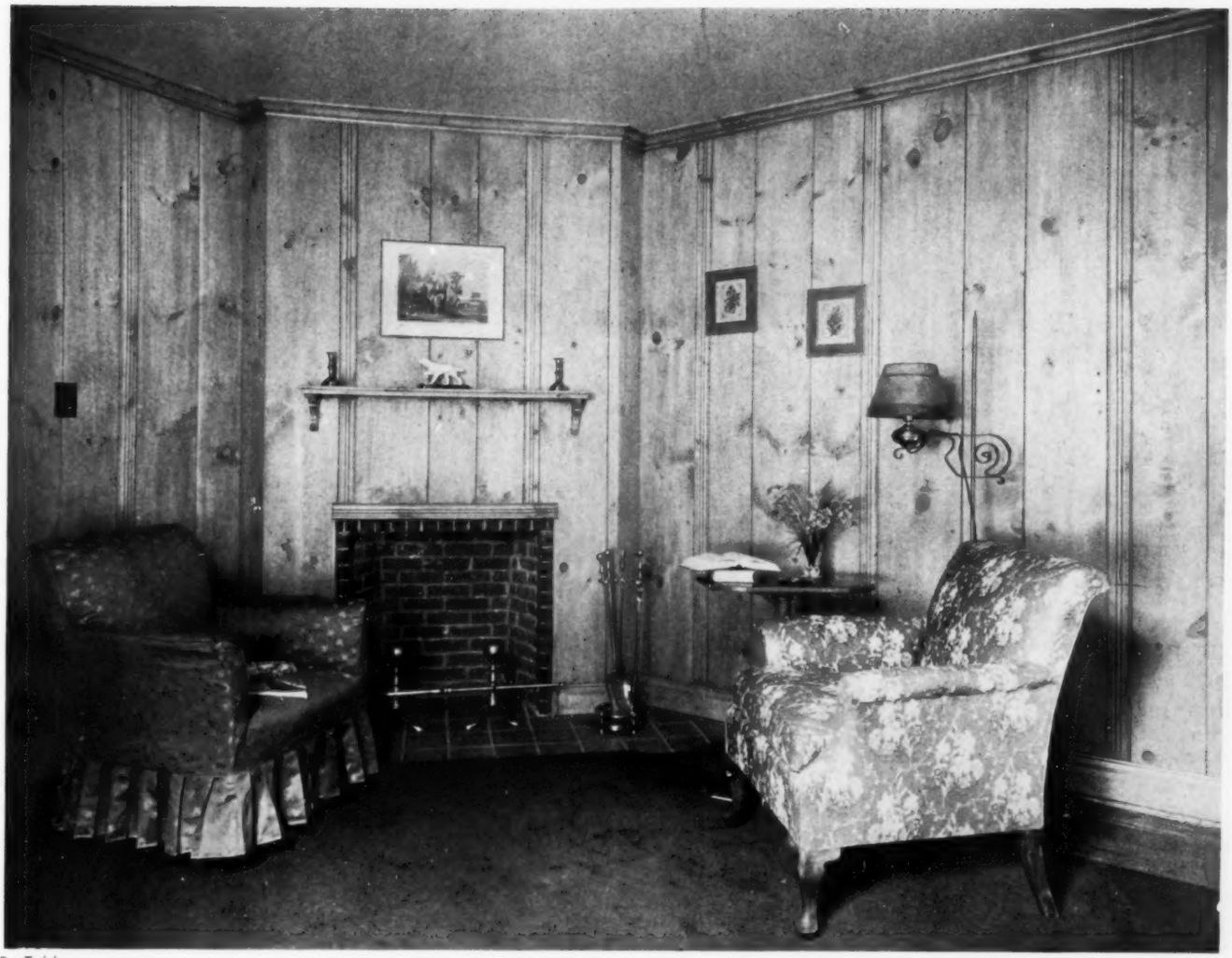
HOUSE OF MARTIN BAKER
KNOXVILLE, TENNESSEE

BARBER AND McMURRY, ARCHITECTS

R. Tebbs

BARBER AND McMURRY, ARCHITECTS

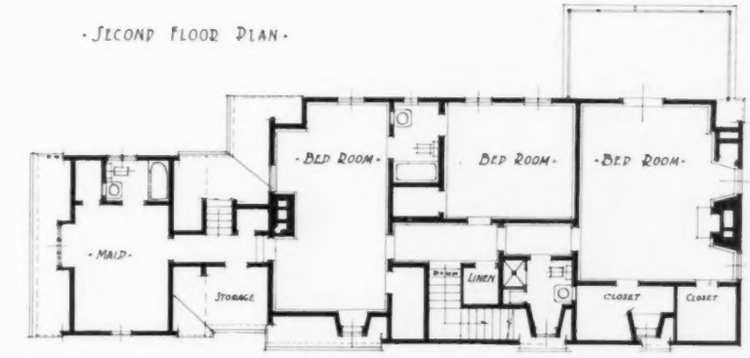
HOUSE OF MARTIN BAKER
KNOXVILLE, TENNESSEE

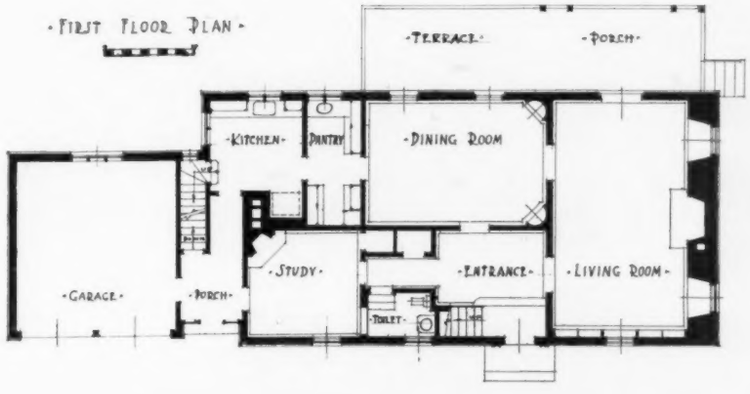


R. Tebbs

Exterior walls are built of weathered field stone picked up from the surface of the ground, and roughly squared. The wide poplar siding is painted. The doorway, which was adapted from a number of early American examples, is framed by two apple trees. The rear of the house is on a bluff facing a bend in the Tennessee River and the magnificent panorama of the Great Smoky Mountains.

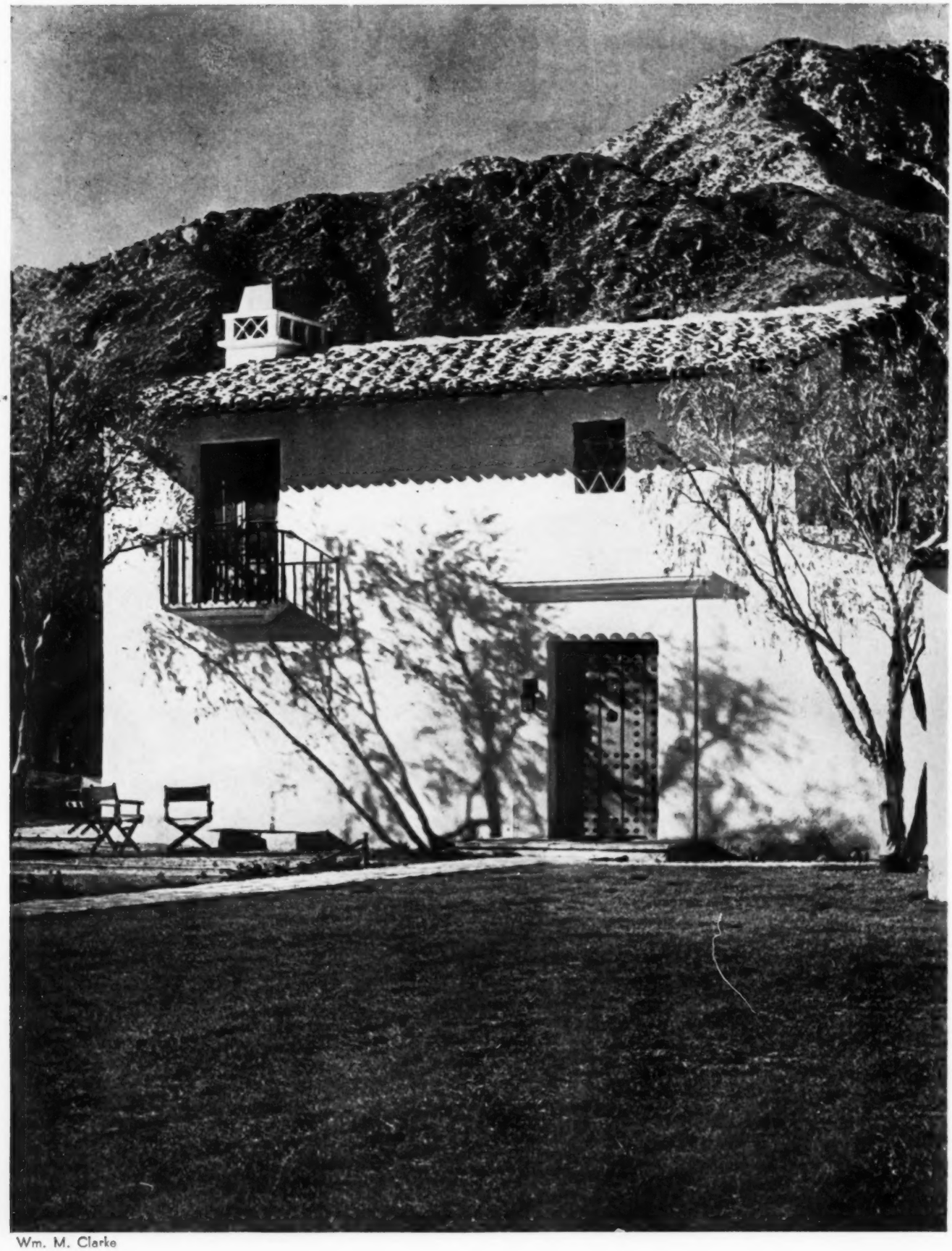
The house cost $17,800 and contains 48,200 cubic feet, costing 37¢ per cubic foot.





HOUSE OF MARTIN BAKER
KNOXVILLE, TENNESSEE

BARBER AND McMURRY
ARCHITECTS



Wm. M. Clarke

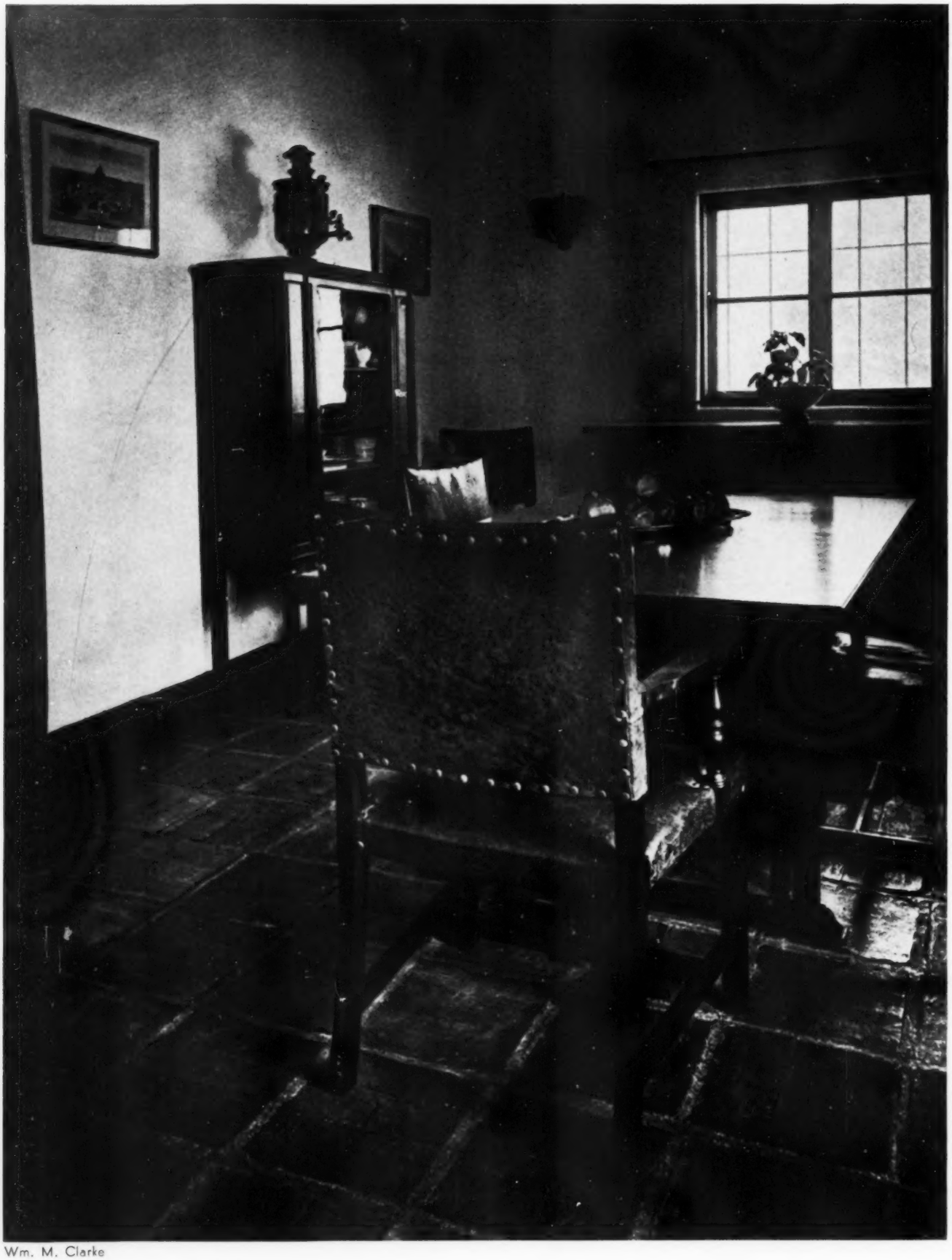
GORDON B. KAUFMANN, ARCHITECT

HOUSE OF WALTER MORGAN
LA QUINTA — INDIO, CALIFORNIA

Wm. M. Clarke

HOUSE OF WALTER MORGAN
LA QUINTA — INDIO, CALIFORNIA

GORDON B. KAUFMANN, ARCHITECT

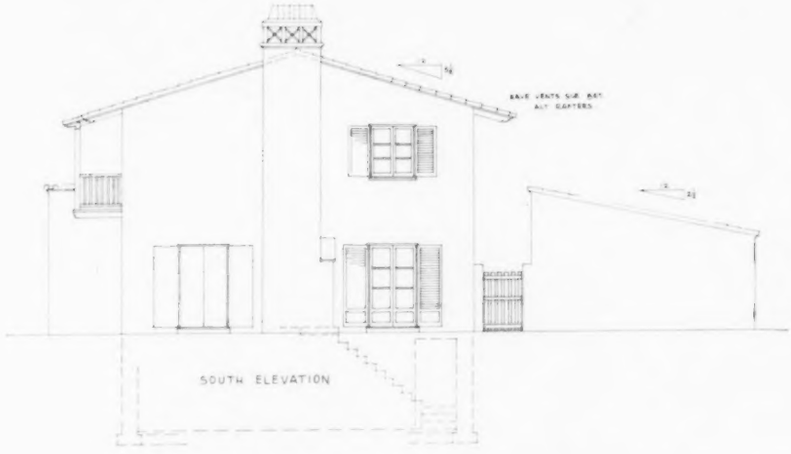


Wm. M. Clarke

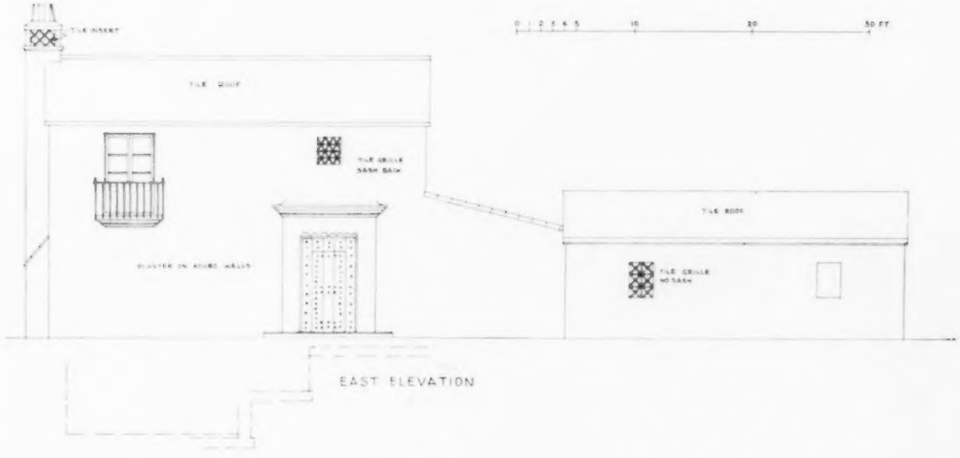
GORDON B. KAUFMANN, ARCHITECT

HOUSE OF WALTER MORGAN
LA QUINTA — INDIO, CALIFORNIA

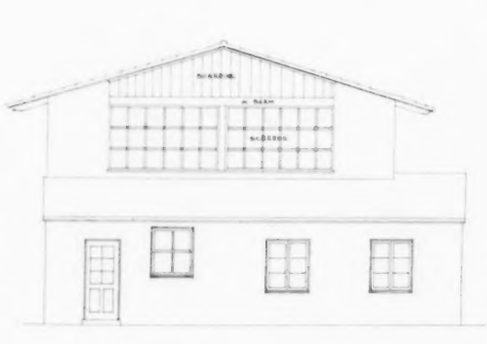
The house has concrete foundations, adobe walls plastered on both sides, tile roof, oak plank or tile floors, and wood windows and doors. It is located in the desert near Indio and is part of the La Quinta Hotel group. All materials, including adobe brick, tile roof, floor tile and casework, were made on the site. The simple Mexican style fits in with the general design of the hotel group, and is particularly adaptable to the dry, hot weather and picturesque scenery.



SOUTH ELEVATION



EAST ELEVATION

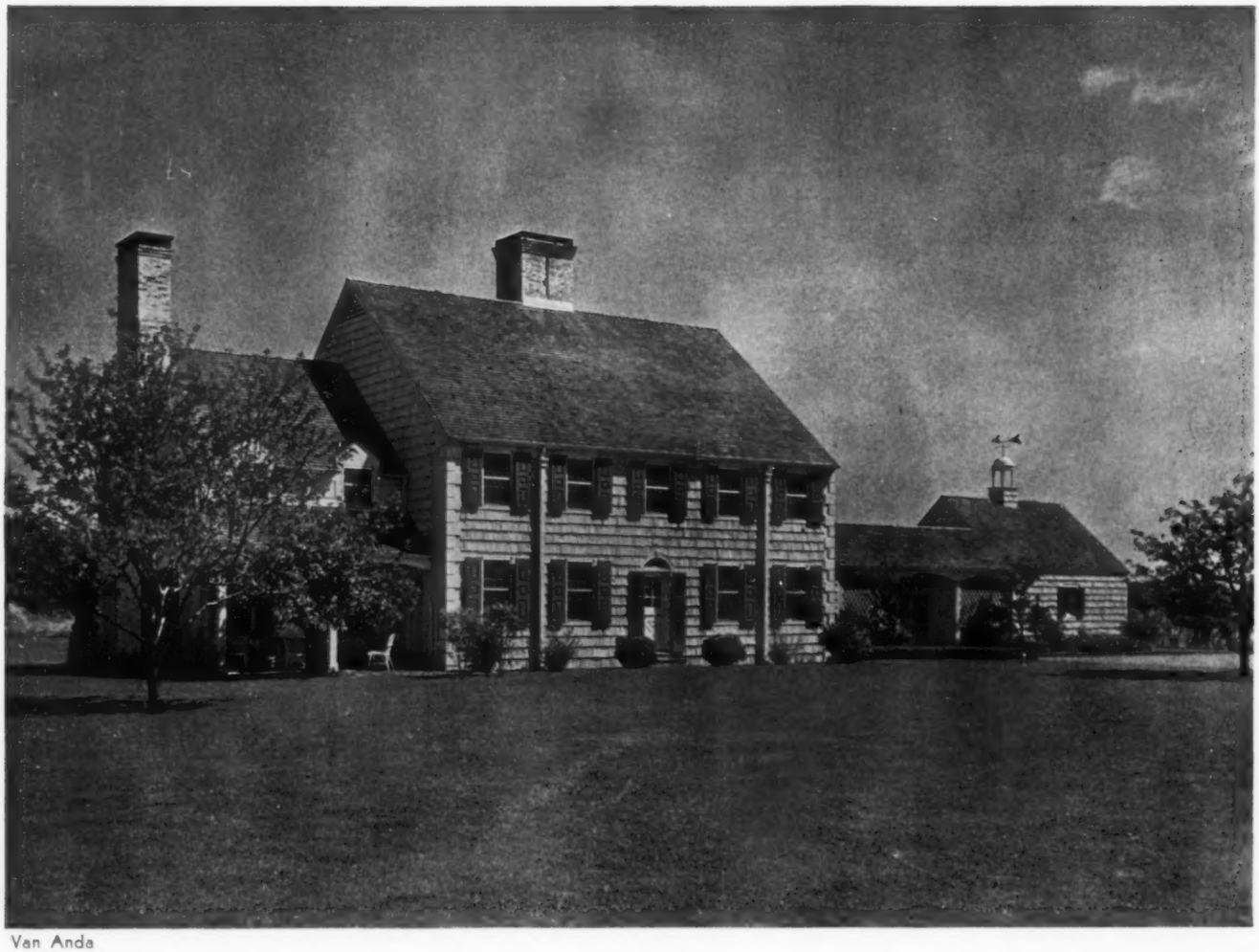


NORTH ELEVATION

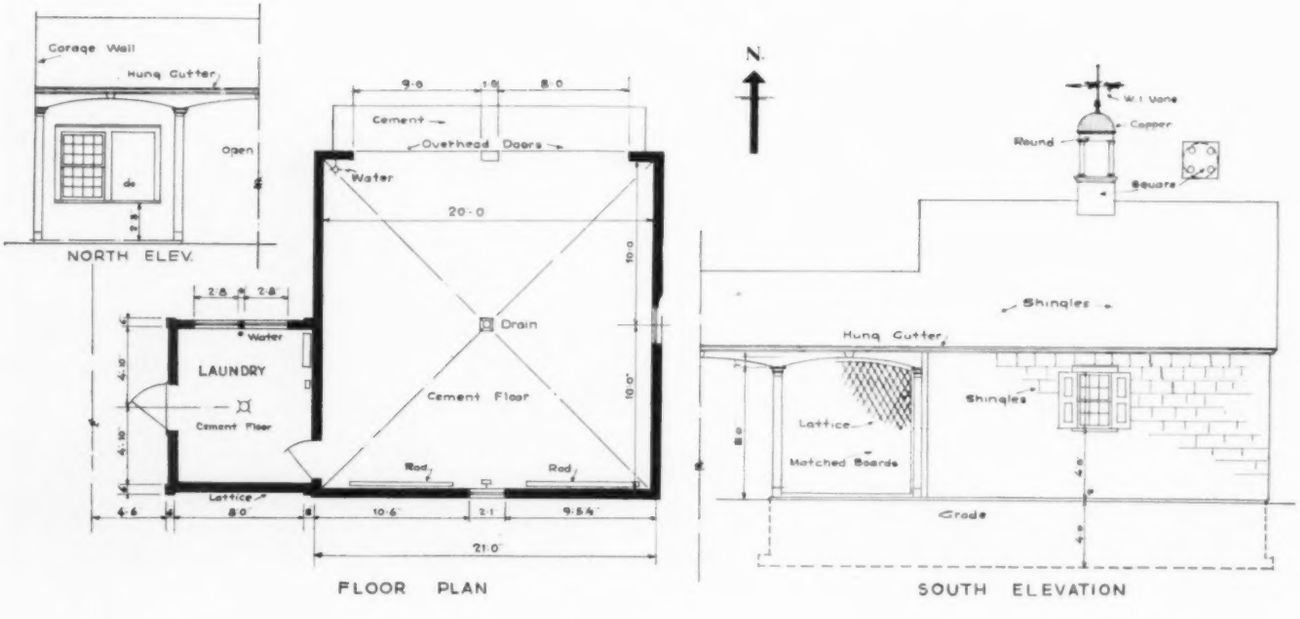
WEST ELEVATION

HOUSE OF WALTER MORGAN
LA QUINTA — INDIO, CALIFORNIA

GORDON B. KAUFMANN, ARCHITECT



Van Anda



POLHEMUS AND COFFIN, ARCHITECTS

HOUSE OF ALLAN C. BAKEWELL
SOUTHAMPTON, NEW YORK

Van Anda

HOUSE OF ALLAN C. BAKEWELL
SOUTHAMPTON, NEW YORK

POLHEMUS AND COFFIN, ARCHITECTS

Van Anda

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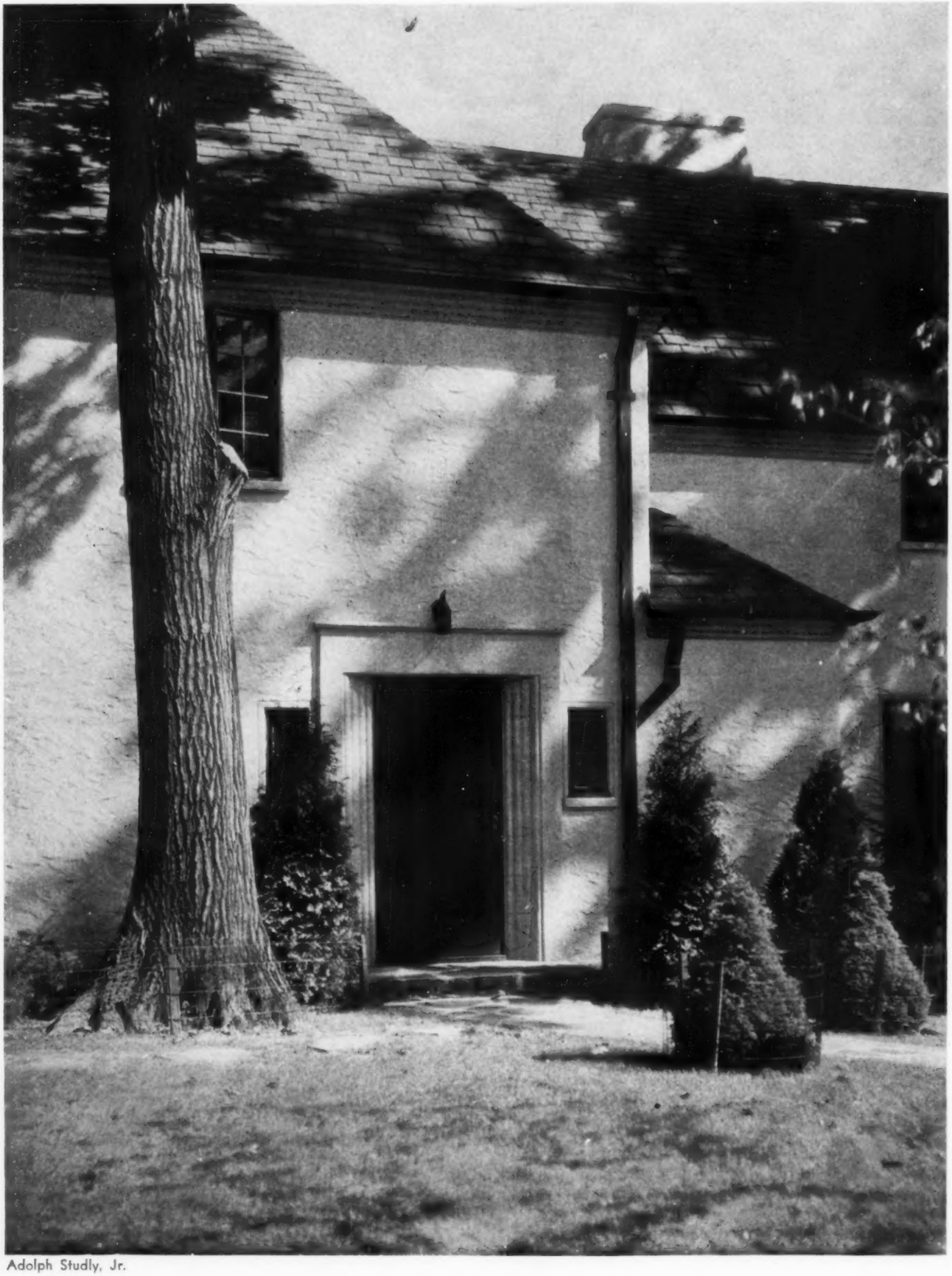


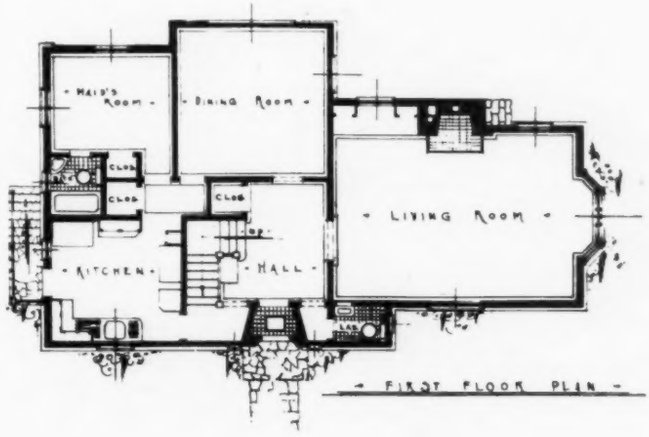
Adolph Studly, Jr.

JULIUS GREGORY, ARCHITECT

HOUSE OF ROBERT E. HILL
FIELDSTON, NEW YORK

Adolph Studly, Jr.

This house was designed for a family of three and one maid. It is built of frame and stucco on metal lath. The site is a sloping triangular lot. A playroom is under the living room; the garage is in the basement with entrance at rear.

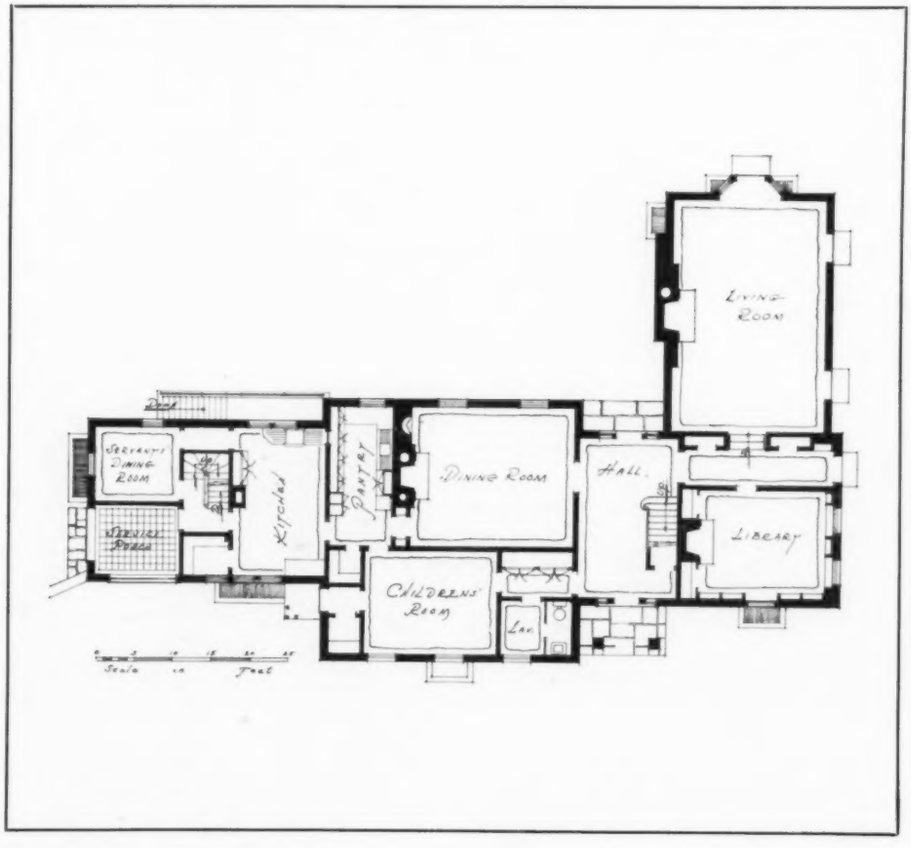


HOUSE OF ROBERT E. HILL
FIELDSTON, NEW YORK

JULIUS GREGORY, ARCHITECT

Van Anda

The house is of English design with gables, two of which are very large. For this reason the shutters were treated with diagonal boards and painted in two colors, thus giving the building a somewhat Swiss appearance. The site is in very hilly country, about three or four miles from Hartford, and rather isolated; it was selected partly because of a peach and apple orchard which makes the place very beautiful during a week or so in the spring. From the back of the house there is a view of twenty-five miles over the Connecticut valley.



HOUSE OF RALPH D. CUTLER
WEST HARTFORD, CONNECTICUT

PHILIP L. GOODWIN, ARCHITECT

Van Anda

Van Anda

In the interior, certain old mantels and carved door and window trim, coming from a demolished house belonging to Mr. Cutler's family, were used in the dining room and living room. The study has special cupboards for fishing tackle and guns.

A special feature of the house is the playroom, taking up all the space under the living room. It has a large stone fireplace and is decorated with trophies of various kinds. All sorts of games, from ping pong to others requiring less pace, are provided. Adjoining is a workshop equipped for carpentry work, with a shower bath and lavatory.

HOUSE OF RALPH D. CUTLER
WEST HARTFORD, CONNECTICUT

PHILIP L. GOODWIN, ARCHITECT

Van Anda

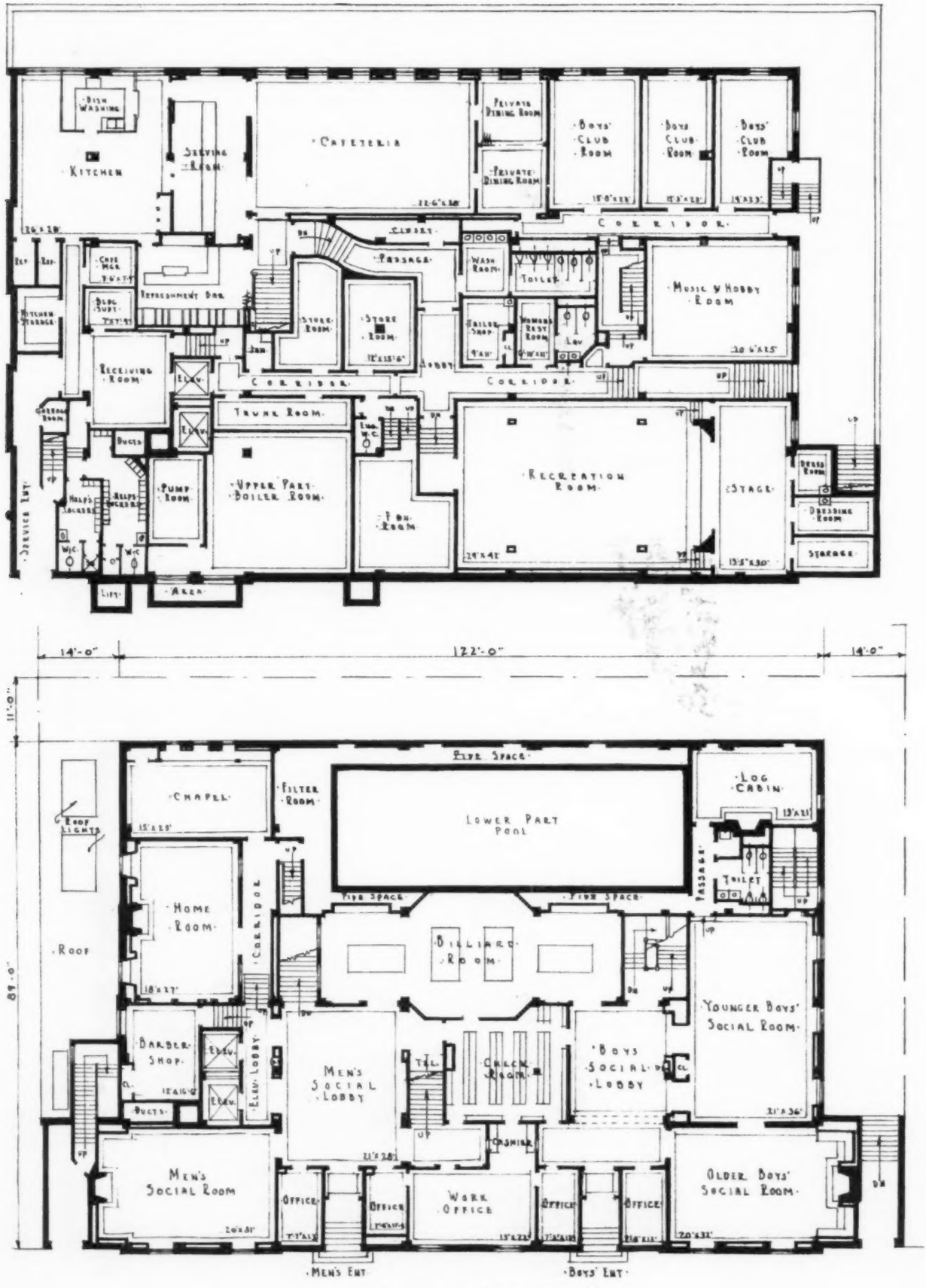
PHILIP L. GOODWIN, ARCHITECT

HOUSE OF RALPH D. CUTLER
WEST HARTFORD, CONNECTICUT

Glasgow

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

JAMES CLINTON MACKENZIE, JR., ARCHITECT



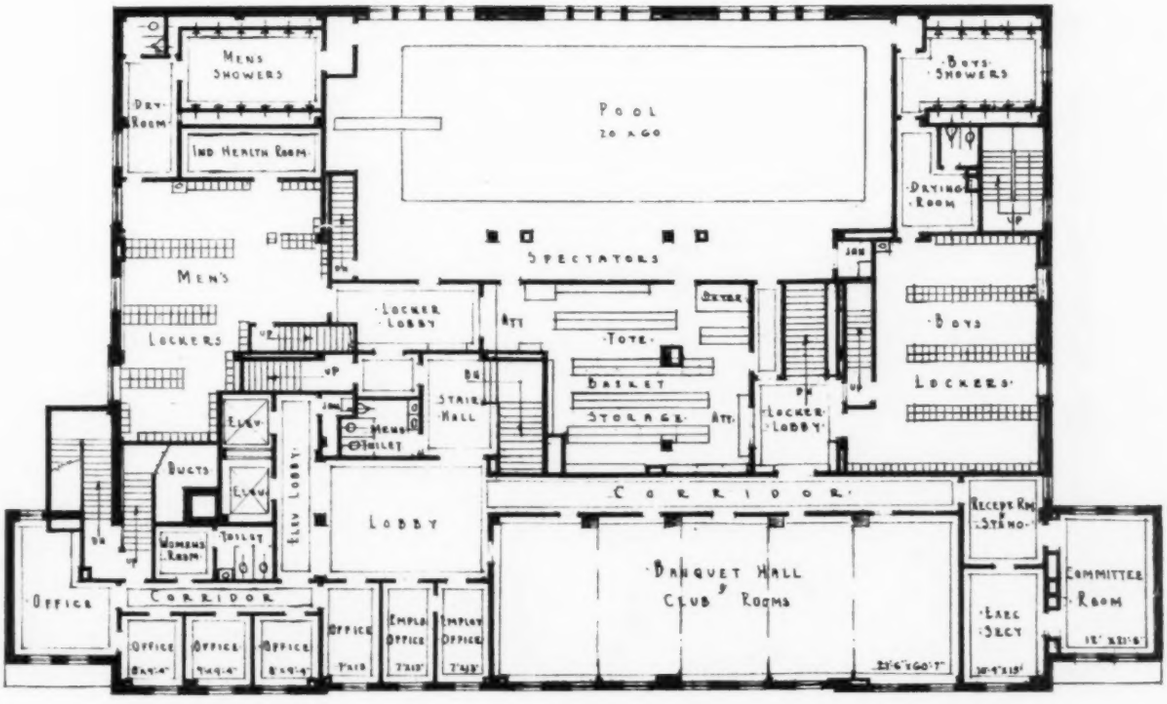
Basement and First Floor Plans.

JAMES CLINTON MACKENZIE, JR., ARCHITECT

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

Glasgow
Street Elevation.

Second Floor Plan.



Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

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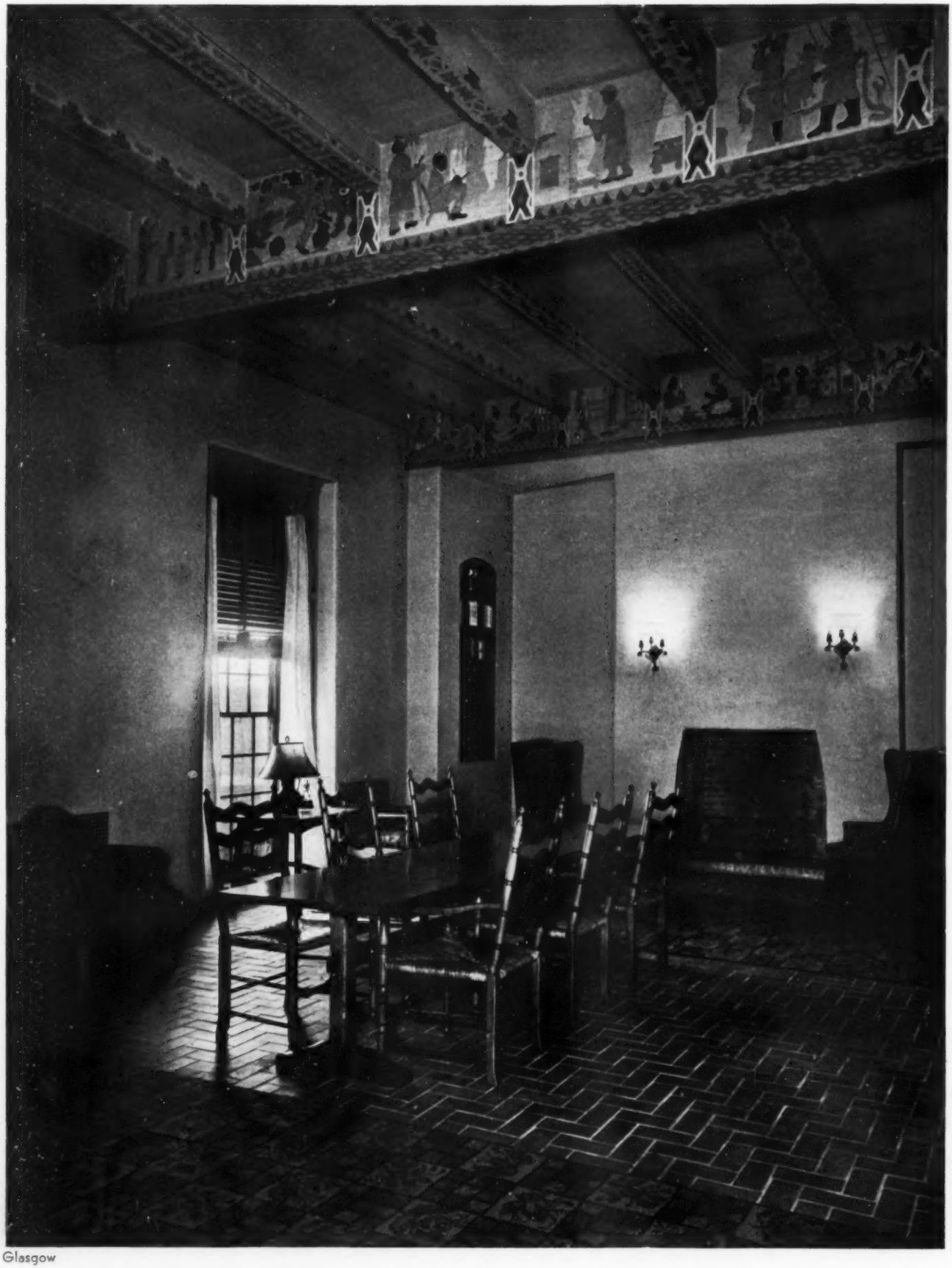


Glasgow

JAMES CLINTON MACKENZIE, JR., ARCHITECT

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

Glasgow

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

JAMES CLINTON MACKENZIE, JR., ARCHITECT

Glasgow

JAMES CLINTON MACKENZIE, JR., ARCHITECT

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

Glasgow

Y.M.C.A. BUILDING, NEW YORK CITY
WEST 135TH STREET BRANCH

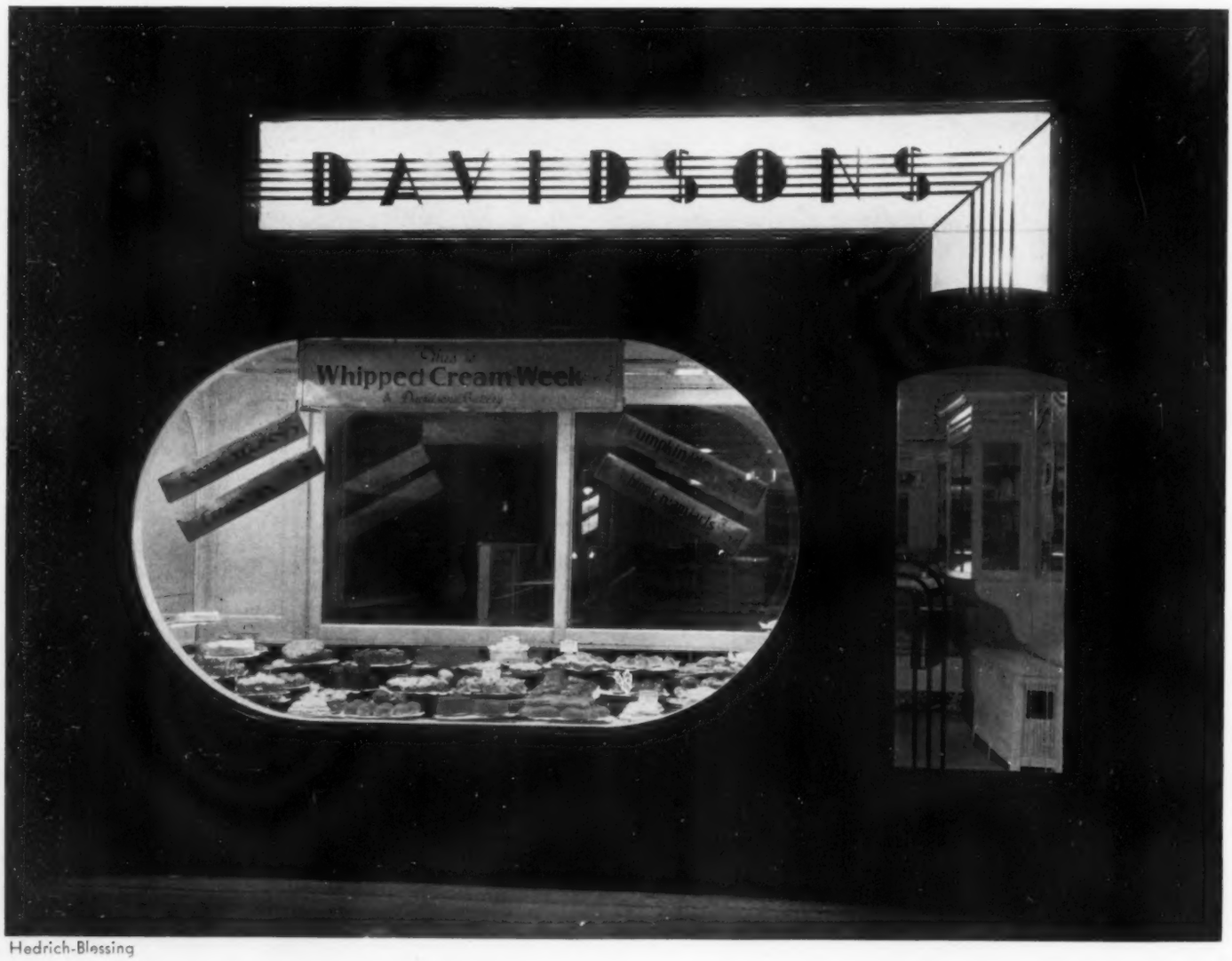
JAMES CLINTON MACKENZIE, JR., ARCHITECT

ALTERATION OF SMALL SHOPS

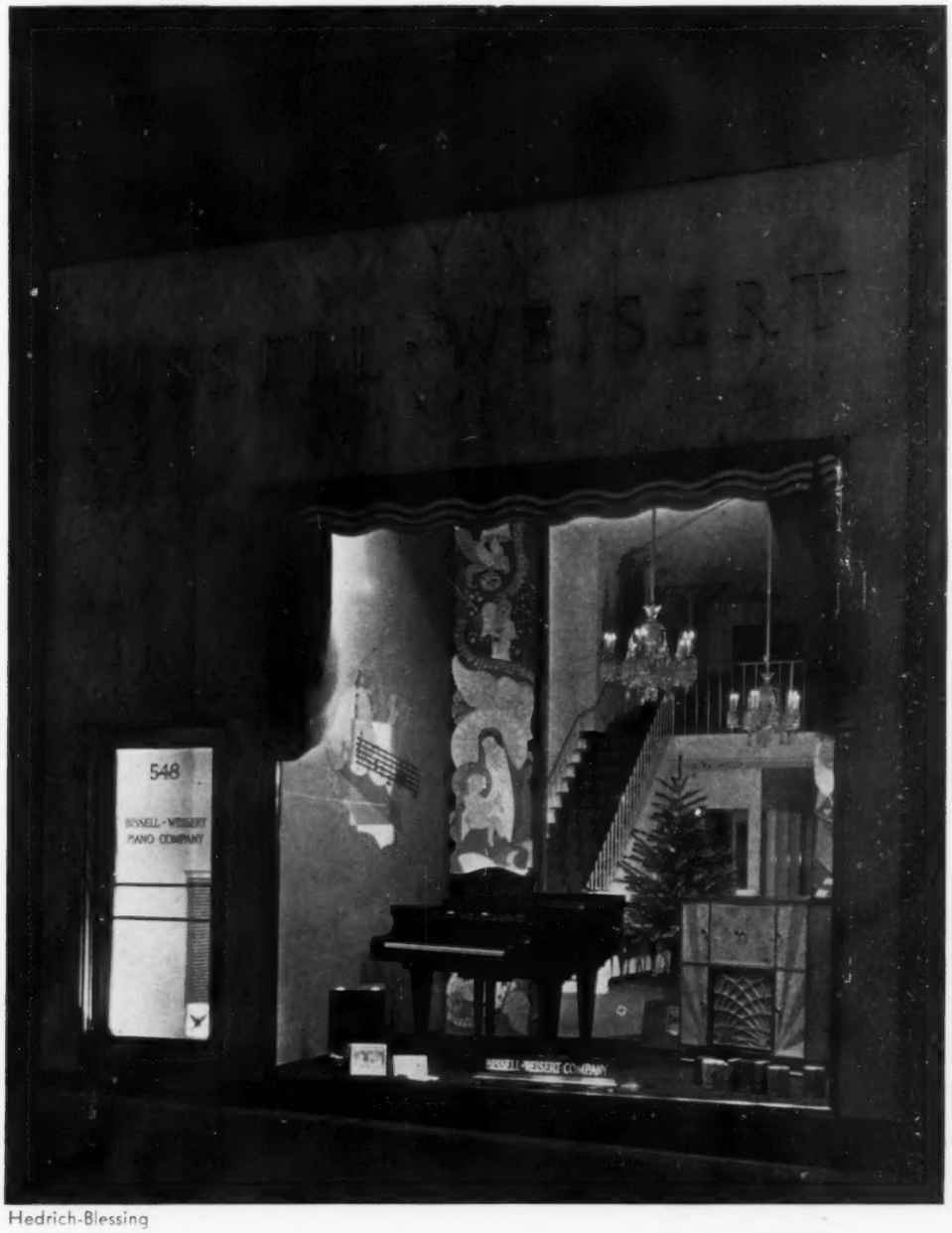
MODERATE IN COST

A BAKERY IN CHICAGO BY GORDON S. GRUNDLING

This store front is surfaced with black structural glass. The window is intended to stress merchandise display, with window background kept subordinate. The interior of the window is in peach color enamel. The window floor is 4″ x 4″ black glazed tile with white joints. Window lighting is accomplished with concealed reflectors. The entrance door is birch with black enamel finish and Rixson floor hinge. Push bars have an overlay initial plated in gun-metal.



Hedrich-Blessing

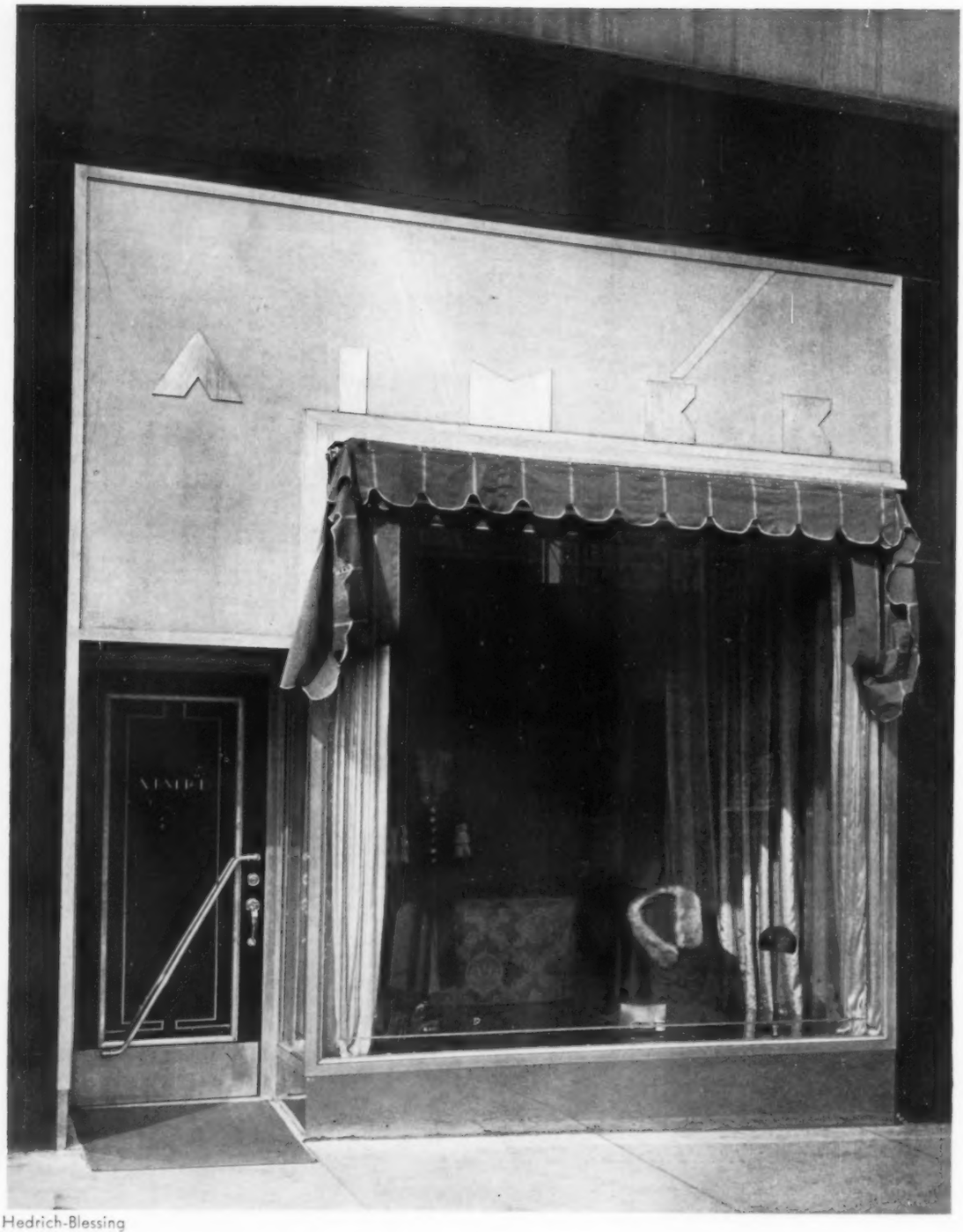


Hedrich-Blessing

A PIANO SHOP, CHICAGO **HOLABIRD AND ROOT, ARCHITECTS**

Display window serves for display within window and to give view of store interior. This window is also an important source of daylight. The surface of the shop front is pink Georgia marble. Lettering is bronze. Door and door frame are bronze. Interior walls and ceiling are turquoise blue. Floor is covered with a black carpet.

Most shops illustrated on these pages have modernized store fronts and with only slight changes to interior arrangement or treatment of fixtures. They represent improvements of moderate cost.



Hedrich-Blessing

AIMEE DRESS SHOP, CHICAGO; HOLABIRD AND ROOT, ARCHITECTS
EXTERIOR WITH BRUSHED ALUMINUM AND STRUCTURAL GLASS

INTERIOR OF AIMEE DRESS SHOP, CHICAGO

Hedrich-Blessing

HOLABIRD AND ROOT, ARCHITECTS

The interior of this small shop combines display of dresses and dress accessories at salient points, and concealed storage of women's dresses. There is a segregation of sales spaces on the ground floor and on mezzanine. The chief source of daylight is at show window. Interior walls are of gray Salubra wall paper.

Hedrich-Blessing

Hedrich-Blessing

WILLIAM J. QUIGLEY, INC., SHOP, LAKE FOREST, ILLINOIS

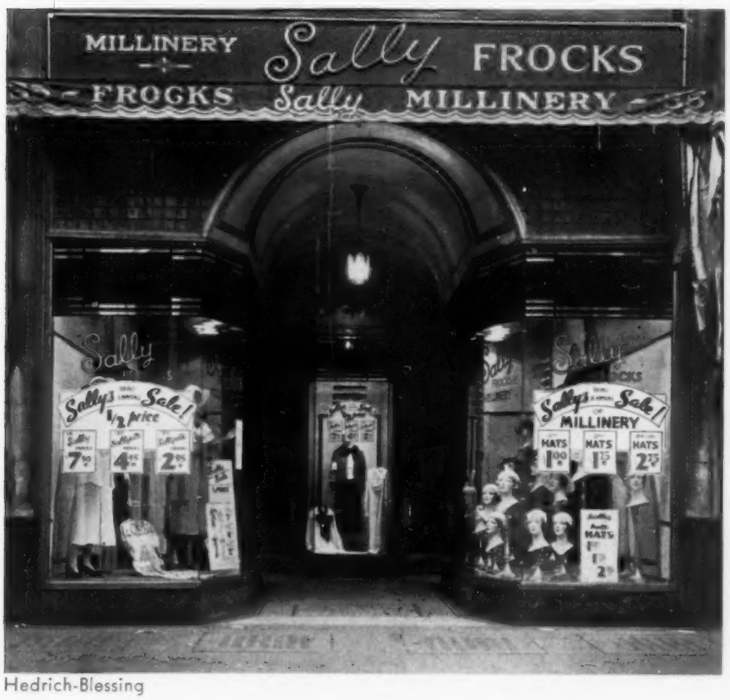
INTERIOR WALLS OF KNOTTY PINE FLEXWOOD, CEILING CHALK WHITE

SALLY SHOP, CHICAGO
HERBERT SOBEL AND
J. ARTHUR DRIELSMA
ARCHITECTS

AFTER ALTERATION

Hedrich-Blessing

Shop faced with black Carrara glass; trim of polished aluminum. Opal glass behind trade name is illuminated at night. No changes were made in plan for this alteration. Existing glass was not disturbed. The changing of glass is, in general, a most costly single item on such an alteration. All work was done without barricade and during the height of the business season.



BEFORE ALTERATION

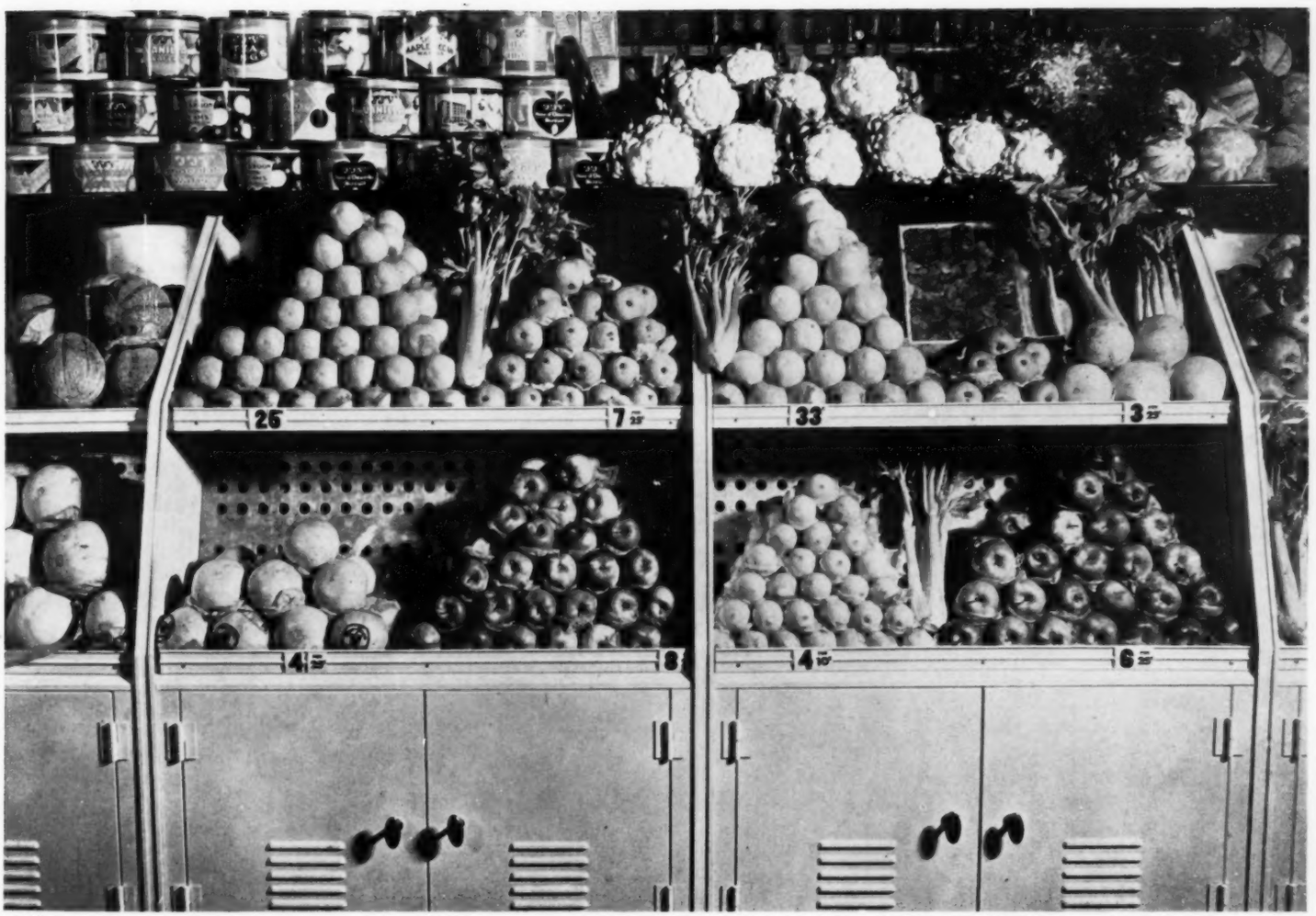
Hedrich-Blessing

BASIS FOR PLANNING RETAIL FACILITIES FOR NORTH SECTION OF RADBURN, NEW JERSEY, WITH 10,000 POPULATION

Kind of Store	Average annual per capita sales, 11 towns	Estimated annual sales, Radburn, at 10,000 population	Average Sales Volume Chain Store Units, 1929			Estimated number of stores	Estimated rent per cent of sales	Estimated possible rental income	Modifying Factors
			U. S. A., local, sectional and national chains	New Jersey Towns 10,000 to 30,000					
				Sectional and national chains	All chains, plus multi-unit independents				
Food Group	$151.04	$1,510,400	$57,200			26	(4.0%)	$60,700	
Grocery	48.41	484,100	44,600	$44,000	$38,700		3.5%	16,900	Maximum of 26 stores: There is a tendency within the trade toward larger stores, combination stores, and complete markets.
Meat	19.74	197,400	50,800				3.5%	6,900	
Combination (Meat and Grocery)	55.24	552,400	72,900	91,300	72,500		3.0%	16,600	
Candy and Confectionery	9.32	93,200	36,900				10.0%	9,300	
Other	18.33	183,300					(6.0%)	11,000	
Automotive	107.95	1,079,500				10	(4.0%)	43,200	
Automobiles	* 80.55	805,500	478,000			2	2.5%	20,100	Present retail automotive facilities in towns near Radburn will affect the Radburn market.
Filling Stations	17.70	177,000	21,200	29,800	28,800	6	8.0%	14,200	
Garages, Repairs	4.11	41,100	44,500			1	13.0%	5,300	
Accessories, etc.	5.59	55,900	59,500			1	5.5%	3,600	
Lumber, Building	68.60	686,000				11	(3.0%)	19,400	
Building Supplies	* 50.24	502,400	60,300			8	2.0%	10,000	Radburn requirements in this category are a special case, due to construction being under a single management.
Hardware, Paint, Glass	13.05	130,500	50,700			2	6.0%	7,800	
Heating, Plumbing, etc.	5.31	53,100	42,800			1	3.0%	1,600	
Clothing (Specialty)	19.08	190,800	69,600			4	8.5%	16,200	
General Merchandise	18.73	187,300	180,000				6.0%	11,800	
Department Stores	* 4.99	49,900	367,600				4.5%	2,200	
Dry Goods	8.31	83,100	49,700				7.0%	5,800	
Variety (5c and 10c, etc.)	* 5.43	54,300	151,400	125,000			7.0%	3,800	
Furnishing and Household	* 12.45	124,500	82,400			1	5.5%	6,800	
Restaurants	* 12.12	121,200	114,200			1	8.0%	9,700	Might be more. Chain store volume not a final index here.
Coal, Wood, Ice	* 22.26	222,600	132,600	134,800	114,100	2	2.0%	4,500	Depends on kind and amount of service supplied.
Drug Stores	13.38	133,800	88,500	116,800	66,300	2	7.5%	10,000	Would probably tend to include goods otherwise classified here.
News, Stationery	5.78	57,800	30,800			2	8.5%	4,900	
Cigars, Tobacco	3.30	33,000	47,600				8.0%	2,600	
Radio, Music	4.27	42,700	135,100				5.0%	2,100	Probably included in General Merchandise or Drug Stores
Florist	3.79	37,900	46,700			1	9.0%	3,400	
Jeweler	3.22	32,200	92,600				9.0%	2,900	See item just above.
Not Otherwise Classified	17.66	176,600	General Average 65,300	61,300	52,400	3	(8.0%)	14,100	
TOTALS	$463.53	$4,635,300				63		$212,300	

The Census of Distribution figures do not include service businesses. No very reliable sources of information in this field have as yet been found, but the following estimate is offered. Such services include barber and beauty parlors, cleaners, tailors, laundries, shoe repair, plumber, electrician, etc. It is estimated that about $15 per capita per year might be spent in this category, which would mean total sales of $150,000 for the community. This might support about 7 stores and, at 8% of sales for rent, would increase rental return by $12,000. Total sales would therefore be around $4,785,300, total number of stores about 70, and total rent income $224,300.

* Highly variable under differing conditions of wealth and location. (Other per capita sales are fairly stable).



Galloway

A store organized for effective display. Whitestone Landing, Long Island, New York.

STORE BUILDINGS AND NEIGHBORHOOD SHOPPING CENTERS

By CLARENCE S. STEIN and CATHERINE BAUER

I. THE PROBLEM

The neighborhood community is the basic unit of city building. The economic success of a neighborhood community and the well-being of its inhabitants depend to a great extent on the planning of the neighborhood shopping center. Such a center supplies the daily and staple needs of the homes within a limited radius. It differs from the regional or metropolitan market in that it depends on purely local trade. It gets little if any patronage from outside. If it is to be successful, it must be convenient in location and attractive in arrangement. Its prices must be reasonable and, above all, it must be profitable—profitable to the storekeeper, to the landlord, to the neighborhood community, and in taxes, it must be profitable to the city.

All the details in the problem of planning shopping centers for a new community resolve themselves into four general categories: quantity, location, form, and control. How many and what kinds of stores will be required? What form shall they take, where should they be located? And how can long-time success be guaranteed, in planning and in operation?

Quantity, number and kinds of stores, must be analyzed first. Form must follow function. So far experiments have been made only in the matter of form, and a large number of these experiments, although valuable as suggestions, have been invalidated through lack of any scientific basis in the matter of quantity.

To plan a successful neighborhood shopping center, we must first know what to plan for, how many

stores and what kind. Numerous painstaking surveys of existing conditions have been made for the purpose of setting up a basis for future planning. These have attempted to find the number and kinds of stores that would be needed by counting the number of existing stores or measuring the number of front feet occupied by existing stores and comparing that with the neighboring population. All these studies serve but one purpose: they show us what not to do, for any one who looks around his own neighborhood knows that there are too many stores. And so we can only use most of these analyses of existing conditions as a warning. They show why the great majority of shopkeepers make something less than the barest living and die off like flies before they even get started. They explain the long rows of empty stores in every neighborhood. They explain the enormous and expensive turnover in store property. They explain decreased values, empty lots, blighted streets and uncollected taxes.

The picture they paint is not one of emergency depression conditions. Most of these studies were made in the good old days of prosperity or so-called "normalcy."

In 1929, according to the U. S. Census of Distribution, there were a million and a half stores in the United States. *One-half of these stores had annual sales of less than* $12,000 *per year and were responsible for only 8.6% of the total business.* The average sales for these 750,000 stores was only $5,500. Except in very special cases a store doing $12,000 worth of business, even if it pays only $500 rent, even if the proprietor and his family are the only sales force, cannot make the proprietor a living wage, let alone a return on his investment. *Almost every one of these* 750,000 *stores was an uneconomic marginal store.* Where were they? Some of them were doubtless in the country. But the vast majority were not. And an enormous percentage were certainly in new or developing residential districts: "tax-payers," strung out in miserable rows, unrelated to the needs or the form of the community which they pretend to serve.

The Trial Census of Distribution, made in 1927 by the U. S. Chamber of Commerce, covering eleven cities which together have one-twentieth of the total population and do one-tenth of the nation's business, brings to light similar figures. One quarter of the independent food stores did a business of less than $5,000. The report figures that such a store could not possibly net its proprietor more than $.32 return per day. It continues: "The average store with an annual volume of $5,000 has little chance of surviving, and while the possibility of profitable operation increases with annual volume, it is not until we reach a volume of more than $50,000 that more than mere existence appears possible. Of all independent grocery stores, 5.66% reported a volume in excess of $50,000 and accounted for 32.32% of the independent business."

These figures, it must be borne in mind, are "Prosperity" figures. What conditions are at present may be left to the imagination.

There are certainly too many stores, and particularly in just that category of store which makes up most of the business of a neighborhood shopping center; stores dealing in food and other staples. The result of such conditions is obvious, and not far to seek for statistical proof. The rate of mortality among new independent businesses is about the same as that among mosquitoes with winter coming on.

A survey made in Buffalo in 1929 showed that somewhere between 30% and 60% of all independent retail stores (depending on the type, but with grocery stores invariably the highest in mortality rate) go out of business during the first year of their existence.

In Louisville it was found that 45% of all the groceries started between 1921 and 1928 failed in the first year of their life. (It is interesting that this was not due merely, if at all, to chain store competition for almost exactly the same proportion of new grocery stores failed during a comparable period back in the '90's, and this not only in Louisville but in several other cities surveyed.)

A survey by Mr. Paul D. Converse of 255 Illinois towns shows that a new dealer entering business has two chances out of three of lasting until the end of the following year, an even chance of lasting to the end of the second year, and two chances out of five of lasting until the end of the third year. Groceries, restaurants and garages, all staple neighborhood enterprises, are throughout the highest in rate of turnover.

In Kansas City in 1928 around 50% of the restaurants quit within one year of opening. Half a dozen other reports, including every serious survey that we have come on in the field, supply similar figures.

What happens when a store fails? First of all, the retailer loses his savings, perhaps has to go into bankruptcy. The wholesaler and other distributing agencies distribute their loss over the general price-level, thus raising prices to the consumer. The landlord probably loses back rent, and certainly must look forward to a period of vacancy and the cost of renovation for a new tenant. The community loses by unsightly vacancies, and eventually possibly by a devaluation of surrounding areas. And the city loses a source of tax-income.

All of which goes to prove that in determining the size of shopping centers logic, not precedent, must be our guide. A healthy shopping center must fulfill five different requirements:

1. It must satisfy the *consumer*, by giving him a reasonable selection of goods at a fair price in a convenient location.

2. It must satisfy the *landlord*, by providing adequate rentals, a minimum of vacancies and reasonably low turnover in tenants. In short, a maximum return on a minimum investment.

Galloway

Public Market in Richmond, Virginia. A hold-over from method of selling by farmer to customer. Very few localities provide suitable parking space for trucks and for needed display.

3. It must satisfy the *storekeeper,* by providing an adequate return for intelligent operation, and reasonable assurance of permanent demand.

4. It must satisfy the *community* as a whole (whether the property is in single or multiple ownership), by being attractive and harmonious when built, and by presenting no danger of blight or decay, which might eventually affect the entire neighborhood.

5. It must satisfy the *city* or other governmental body, by paying adequate and regular taxes.

There is hardly a shopping center in the country which fulfills these conditions, even in times of prosperity. And the principal reason was then as it is now: there were too many stores, too many from the point of view of all interests.

1. The *consumer* sometimes appears to profit momentarily from cutthroat competition, but in the long run the burden of wasteful distribution and store-mortality falls on his neck. And the consumer as home owner, as neighborhood resident, loses out from the start.

2. The *landlord* receives rent irregularly from tenants who go out of business regularly.

3. The *storekeeper,* if he is independent, and most of the marginal stores are independent, invests all his savings and has about a fifty-fifty chance of pulling through the first year, not to mention the almost hopeless possibility of making a decent living.

4. *Communities,* healthy and well kept up before the mushroom growth of tax-payers within their limits, are everywhere being infected with progressive blight and decay from conditions engendered by a planless surfeit of stores made unavailable for other use because zoned for business.

5. *Cities* are going bankrupt because they are unable to collect adequate taxes in blighted areas.

There is nothing in our present methods of *laissez faire* that will help us out of this mad condition of a surfeit of stores that harms all interests. All methods of estimating store requirements for new neighborhoods, which are based on quantitative uncritical surveys of existing conditions, are worthless for this purpose.*

Chaotic waste in construction of stores, in store operation and in cost of distribution, is not a necessary and unavoidable condition. It is possible by scientific analysis of the problem and by planned large-scale construction and control to set up shopping centers that will fulfill the requirements of the five interests concerned.

Any approach to scientific store planning must be based on one simple fact, namely, that any given community has a fairly definite and ascertainable

*See note on page 187.

Galloway

Main Street, Huntington, Long Island. Principal shops border this street which is a main arterial highway. Parking is permitted in center of street and along curbs. This has resulted in excessive congestion.

purchasing power, and the modifying factors—income, general character, buying habits, location in relation to larger centers, etc.—are quite capable of analysis and forecast.

There are four principal questions for which the planner must find answers before laying out a new local shopping center. They are:

1. How much local business in dollars may we reasonably expect? (How much lost to and how much attracted from other centers?)
2. How will the local retail dollar be divided by kinds of business?
3. What is the approximate sales volume and size of a successful store in each classification?
4. How much rent can these different types of stores afford to pay?

Obviously, none of these questions can be answered with complete accuracy. And none of them can ever be answered once and for all. Every community has certain conditions which differentiate it from every other community. Some of these conditions will only be discovered by trial and error.

But there is sufficient scientific data available with which to make a very close approximation to the correct answer to the four basic questions. This should be tested and developed through actual experience and realistic reasoning on the part of active planners and city builders.

The scientific as well as the common sense method of planning retail facilities must begin with an analysis of the number and kind of stores that will be required in a given community. To illustrate this approach to a scientific method of community store planning we have selected as a demonstration problem the northern section of Radburn, New Jersey, which will ultimately have a population of about 10,000.

II. NUMBER AND KIND OF STORES

Planning Retail Facilities for the Northern Section of Radburn, N. J., 10,000 Population: An Example of Method

Elements of the Problem

Not front footage, *not* existing ratios between number of stores and population, but:

Underwood and Underwood

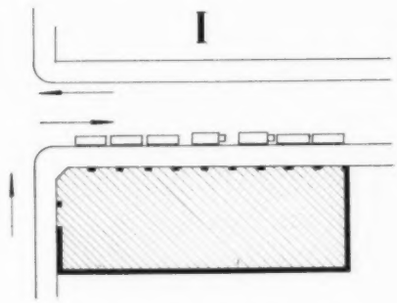
Drive-In Market, Washington, D. C. There is convenient and well-lighted parking space for customers.

1. Total sum likely to be spent within the community for different kinds of goods.
2. Most efficient volume of business needed for success in each category.

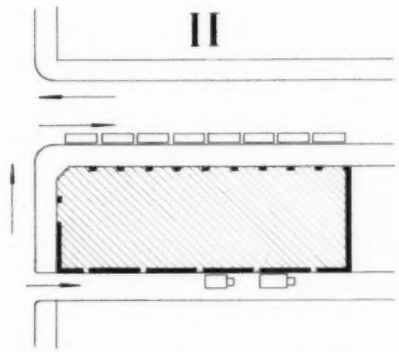
Method of Approach

There are roughly two different methods of getting at the total sales volume, two methods which provide a good common sense check on conclusions. One is based on an analysis of retail expenditures in existing towns of comparable size, location and general character, with due allowance for special features of the case in hand. The other is based on an estimate of the purchasing power of the community, the incomes and probable budgets of the residents. As available material for the first method happens to be much more scientific and complete than that for the second, due largely to the exhaustive Census of Distribution made in connection with the last Federal Census, our estimate of expenditure is based on a comparative survey of sales in eleven comparable small towns.

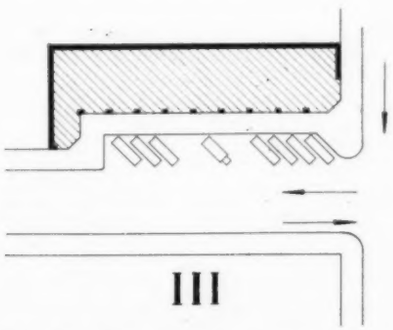
THE PLANNING OF NEIGHBORHOOD SHOPPING CENTERS AS AFFECTED BY THE USE OF THE AUTOMOBILE



(I) Normal type of parking obstructs roads and makes approach to stores difficult.



(II) Deliveries in rear of store on alley somewhat decrease street congestion.



(III) Building set back so as to secure diagonal parking.

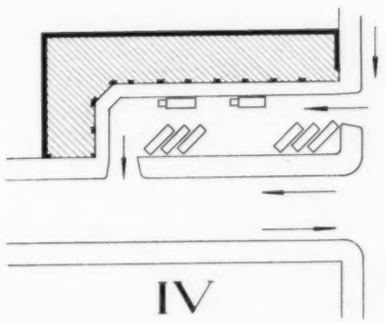
SYMBOLS:

PARKING

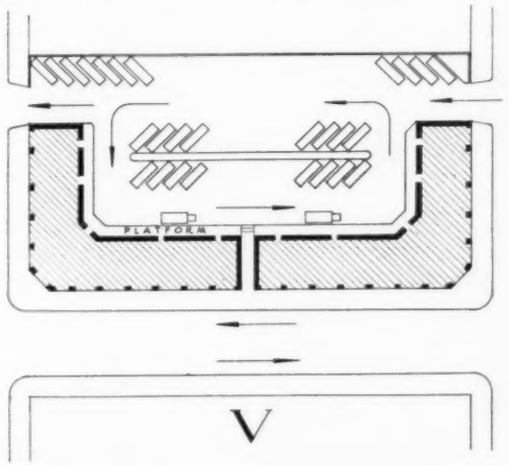
DELIVERY

0 5 10 15 20 25 30.5 METERS

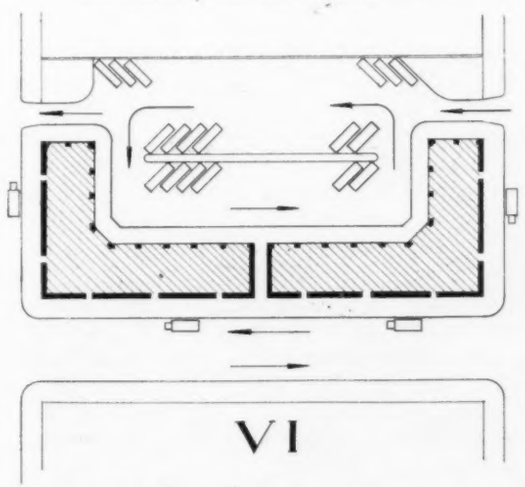
0 20 50 75 100 FEET



(IV) The California Drive-In Market. Parking and delivery on private property instead of public streets.



(V) Another way of taking parking and delivery off the streets.



(VI) The stores face toward the court where the customers arrive in automobiles. Delivery at rear of stores on street.

The figures thus resulting have, however, been roughly checked by the second method.

Use of the Census of Distribution in This Study

What it covers: So far, the published material includes summary reports for the entire country and for each State, and also individual reports for every town of 10,000 population and over. Retail trade is divided into some forty different classifications, and analyzed statistically to show such items as net sales, number of stores, number of employees, operating expenses, etc. Types of management, i.e., independent or local, sectional or national chain, are indicated in all the classifications. State and national summaries also provide figures on all the above items classified according to different sizes of community, and further break down operating expenses to show rent in per cent of net sales in all of the classifications. (Also available for the five boroughs of New York City.) It is possible, therefore, to find exact per capita expenditures in 1929 in any given type of store (excluding service business, such as laundries, etc.) in any town of over 10,000 population in the United States. It is also possible to uncover average annual volume of sales in all categories for both chain stores and independents. And finally, by comparing rental percentages in different businesses, in different States, and in sections of New York City if desirable, it is possible to arrive at some estimate of possible rental which might be expected from such sales.

Selecting Towns for Comparative Analysis

Going over the individual Census of Distribution reports, we picked out some 24 towns in northern New Jersey, southern New York State and western Connecticut, with populations of 10,000 or a little over. Ranging these towns according to per capita food expenditure and total per capita sales, it appeared that eleven of them constituted a real norm, and that the remaining thirteen, ranging about equally above and below this norm, might safely be omitted from the analysis, usually for obvious reasons. (Englewood and Summit, for instance, are abnormally wealthy towns, Lodi is a community entity only in name, Red Bank is the center of a large and rich rural area, etc.)

The eleven towns chosen are not all strictly suburban or commuting centers. It is felt that Radburn, due to the nature of its planning, and due to the fact that there is no larger center immediately adjacent, will be likely to have some of the market qualities of towns somewhat further removed from New York City.

Per Capita Sales: 11 Towns

The eleven towns chosen for comparative study, together with their respective populations and per capita sales in 1929 are as follows:

Town	Population	Per Capita Sales	Per Cap. Food Sales
Naugatuck, Conn.	14,315	$337	$145
Ridgefield Park, N. J.	10,764	380	137
Pleasantville, N. J.	11,580	394	154
Beacon, N. Y.	11,933	431	151
Valley Stream, N. Y.	11,790	437	144
Burlington, N. J.	10,844	456	137
Wallingford, Conn.	11,170	462	157
Westfield, N. J.	15,801	481	159
Rutherford, N. J.	14,915	550	154
South Orange, N. J.	13,630	568	147
Mamaroneck, N. Y.	11,766	579	158

It is worth noting that the figures for New York State, New Jersey, Connecticut and Queens Borough also fall within this range:

New York State	$574	$148
New Jersey	458	140
Connecticut	478	127
Borough of Queens	383	153

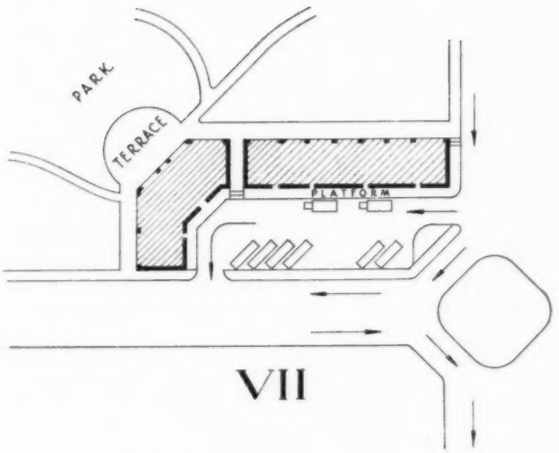
In each store classification, the combined sales in the 11 towns were divided by the total population (138,508) to give the per capita expenditure. These are the figures in the left-hand column of the chart reproduced herewith. An asterisk marks those items which are most highly variable.

Total Estimated Sales, Radburn, at 10,000 Population

This column is obviously achieved by the simple process of multiplying the per capita expenditures by 10,000, with a resulting total estimated annual expenditure on goods other than services of over four and a half million dollars.

Check: Radburn with 10,000 population will consist of about 3,000 dwellings and families. The average rent (or its equivalent) will be about $75 per month per dwelling, or $900 per year. Average income, then, according to most sources of information, is likely to be something just under $4,000. It is agreed by several responsible authorities that between 35% and 40% of income is likely to be spent within a residential suburban community, provided the store facilities are adequate and conveniently located. Most of this will be spent on food and automobile supplies. If the combined income of the residents of Radburn is, therefore, about $12,000,000 their local expenditures by this method of calculation would be somewhere around four and a half million dollars. Which figure checks in general with our previous calculations. (Additional expenditures for services and for amusements not listed here would probably be more than balanced by judicious cutting in some of the categories, necessitated by the special conditions at Radburn. The most obvious of these is the Lumber and Building Material Item.)

Here there are also two methods of approach, which, at least when they are better documented, may be used to check each other. One of these rests on the simple and obvious fact that the average chain store is infinitely more likely to be efficient and economic than the average independent. For one thing, the big chains have means of analyzing markets and desirable locations which no independent can hope to achieve. For another thing, they have cumulative experience concerning the volume of business necessary to show a profit in different lines of trade. And finally, they are very unlikely to keep a store in operation very long which proves itself unprofitable. In most cases, and particularly in the field of staple and more or



(VII) The store group in a town of the Motor Age such as Radburn, N. J., should face toward the park as most customers will walk to it.

(VIII) The Neighborhood Shopping Center fully developed to meet modern requirements will care for those who come on foot or machine. It will face toward green open spaces and turn its back to the road. Safe parking of children will be even more important than parking of automobiles.

less standardized goods which form by far the greater share of the small town market, it seems fair to consider the average chain store volume as a good indication of the size of business which an efficient store must produce.

The third, fourth and fifth columns on the chart show the average volume of business of chain store units in the different categories in 1929, as derived from Census of Distribution figures. On the left are the figures for all the local, sectional and national chains in the United States. The general average is $65,000. The other two columns show such figures as were available for New Jersey towns of 10,000 to 30,000 population, the middle dealing with sectional and natural chains and the right-hand column with all chains plus multi-unit independents.

It will be seen that the variations, particularly in the food group, are not very wide. The general average for the larger chains in the New Jersey small towns was $61,000 and for all forms of chain $52,400. (It may be well to point out in this connection that the average sales in single-store independents were $25,000 for the United States and $27,000 for the New Jersey small towns. Moreover, the *median*—the business volume below which fall more than half of these stores—was less than $12,000.)

Check: The other method of uncovering the size of a healthy store would, of course, consist of a scientific analysis of all the factors which go into retailing, with particular attention to the progressive tendencies already visible within the business itself. Such a work was of course impossible within the limits of this study. Considerable authoritative trade literature has been consulted, however, and the conclusions tend to uphold the tabulated figures. For instance, all authorities agree that a food store must do $50,000 worth of business in order to be a permanent paying proposition. (The average annual volume of independent grocery and meat stores was $17,000 in the United States as a whole and $14,000 in the New Jersey small towns; the median being of course much lower.)

In general also the tendency of efficient modern practice is toward larger stores handling a wide variety of goods and away from the specialty shop. This tendency is so marked in the food business in particular, where large markets (sometimes run on a concession basis) are growing up in various sections of the country, that we have not itemized the

number of food outlets according to kinds of stores. Food store facilities must provide an *equivalent* of the 26 units estimated on the chart, but the actual form must be determined later after careful study and conference with authorities in the field.

ESTIMATED SPACE REQUIREMENTS FOR STORES OF VARIOUS TYPES

Type of Store	Dimensions	Area (Sq ft.)	Authority
Grocery	40′ x 60′	2,400	Safeway Stores, California.
	35′ x 60′	2,100	Average chain store doing $3,000 weekly business.
	30′ x 40′	1,200	Lönberg-Holm, architect.
	20′ x 45′	900	Carl Dipman, editor of *The Progressive Grocer.*
	20′ x 35′	700	Average chain store doing $1,200 weekly business.
	28′ frontage		W. F. Williamson for store doing $100,00 business annually.
	16′-18′ front		W. J. Baxter, Chain Store Research Bureau.
Grocery and Meat	100′ x 100′	10,000	Ralph Morgan, President of Chain Store Research Bureau.
	60′ x 100′	6,000	Average store.
	35′-50′ front		W. J. Baxter.
Drug store	20′ x 80′	1,600	Ralph Morgan.
Variety (5 and 10c)	40′ x 150′	6,000	Kresge and Woolworth.
Specialty—hardware, etc.	20′ x 80′	1,600	Ralph Morgan.
	20′ x 36′	720	Ideal electrical contractor's, National Lamps Works.
Chain Department	50′ x 120′	6,000	J. C. Penney average.
Shoes	20′ x 100′	2,000	Wise Shoe ideal.
	20′ x 80′	1,600	Walkover ideal.
	15′ x 75′	1,125	Beck Hazzard ideal.
	18′ frontage		W. J. Baxter.
Candy	7′ x 40′	280	Mary Lee shops.
	or 9′ x 30′	270	
	18′ frontage		W. J. Baxter.

All store examples and estimates from Baxter, William J., *Chain Store Distribution and Management,* 1932; Williamson, W. F., *The Retail Grocer's Problems;* U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce.

STORE SPACE REQUIREMENTS

In trying to determine the amount of space desirable for stores of various types doing a profitable business, one is faced with a shortage of scientific material on the subject. Chain stores and chain store organizations seem to be the only ones who have thought at all in terms of the model, ideal, or average store, and the few figures available vary so much that they are of little use. Grocery store estimates vary from 20 to 40 feet in width and from 35 to 60 feet in depth, while the addition of a meat department increases the width to 60 or 100 feet, the depth to 100 feet.* For the ordinary shop (shoes, specialty, hardware, drugs, etc.), the 20′x80′ recommendation of Mr. Ralph Morgan, President of the Chain Store Research Bureau is typical. On the other hand, in actual practice, high rents in desirable locations enforce the use of smaller areas. Mr. William J. Baxter of the Chain Store Research Bureau points out the present-day trend among chain stores toward the use of smaller stores because of

1. High rents;
2. Consolidation of stock by introduction of new and more compact lines of goods and less bulk goods;
3. Economy and efficiency in the use of space.

* Baxter, William J. *Chain Store Distribution and Management.*

Estimated Number of Stores of Each Kind

The figures in this column on the chart have obviously been secured by roughly dividing the total estimated sales in each category by the estimated size of a healthy store. Where the sales were too small to warrant allowing a separate unit, they have been combined with other suitable categories. The total number of store-units, excluding services, is estimated at 63.

The fact that analytical and critical use of available facts leads to something very different from present conditions may be attested by the following table:

Number of Stores per 100 Population	
U. S. A.	1.26
New Jersey	1.49
Eleven small towns	1.43
Borough of Queens, N. Y. C.	1.16
Radburn as planned	.63

Possible Rental Income

We have occasionally, for matters of convenience, distinguished between the interests of the landlord and those of the community as a whole. However, it is one of our major premises in attributing importance to scientific and economic store planning that, in the construction of large-scale housing and communities, the interests of the store owner and the community will be identical. For they will be the same thing. This part of our premise has already been accepted in the financial set-up of most recent housing projects. It is taken for granted that the profits arising from store properties shall go to the community as a whole.

These profits come from rent. It is apparent from a comparison of Census of Distribution figures for the country as a whole, New Jersey, New York, Connecticut and the Borough of Queens, that the average rent is a fairly regular percentage of the sales volume of a store. The composite percentages resulting from this survey have been listed in the next to last column of our chart, and the resulting estimated rentals in the last column. The total possible rental income, excluding service businesses, comes to $212,300.

There is one axiom to be mentioned in this connection, an axiom which sums up the whole point of this section of our study. Namely, that it is more profitable to get a certain amount of rent *regularly* from ten healthy stores than it is to get the same amount of rent irregularly from twenty-five marginal stores doing the same total volume of business.

Modifying Factors

The estimate of 63 stores selling goods at retail is by no means the final figure. It is merely the basic figure achieved by multiplying the average per capita sales in the eleven selected towns by 10,000 and then dividing the product by the average volume of a chain store unit. Obviously, there must be certain modifications.

In the first place, the Census of Distribution does not include stores which may be classified as services: laundries, shoe repair shops, barbers, etc. We have made a rough estimate of the sales and number of stores and possible rentals of shops in the category, at the bottom of the chart. The number of stores is thereby increased to 70. This is a field in which accurate statistical survey and research are needed.

Then also, it must clearly be taken into consideration that the Census of Distribution was made in 1929, a "prosperity" year. In so far as *prices* may have been permanently lowered since that time, it will affect the total volume of sales, but by lowering the whole scale of costs, wages and rents, it will probably not have materially changed the number of stores required. On the other hand, it is probable that the permanent purchasing power of such a community, in terms of *goods*, will remain for a long time below the 1929 level. The effect of this probably will not be very great on stores dealing in staples, particularly those in the food group. The luxury goods outlets will, of course, be the first to be affected, but the extent of this effect cannot as yet be gauged with any accuracy, as we may still hopefully assume that present levels of purchasing power are as far below the norm as 1929 was above.

Radburn, however, has certain special characteristics which will further influence the basic index figures on our chart. For one thing, its population is not likely to include any very wealthy or any very poor people. This fact will tend to decrease to a certain extent the amount of strictly luxury goods consumed, but it may also tend to increase the per capita consumption of staples: food, drugs, dry goods, services, etc., even possibly automobiles. Special requirements due to particular characteristics of the population must be considered. Educators, skilled workers and clerks have all about the same income but with very different buying and living habits.

The consumption of coal, wood and ice depends obviously on the arrangements for heating, refrigeration, etc. The possible existence of local industry and of wage-earners employed at Radburn although living outside, will have considerable influence on restaurants, and also on amusements. The fact that both Ridgewood and Paterson are large centers for the sale of automobiles may further modify the possibility of such sales at Radburn.

Another modifying factor is the fact that, particularly outside the field of staple goods, the size of a chain store unit cannot be used too rigidly. This is probably more true of restaurants than of any other single item. It is quite possible that smaller restaurants and cafés of a different character from the usual chain establishment might well be conducted on a profitable basis, but the income and the ground area required will remain approximately the same.

How Generally May Our Ratio of Stores to Population Be Applied

This is a very important question and must be answered very emphatically. There is no rule-of-thumb method for determining either the amount of sales or the number of stores in a new community. Every case requires special study and analysis. Our ratio of .7 of a store for every 100 people applies to Radburn itself *only* when it has reached 10,000 population. A survey of smaller communities in this region shows that there is almost invariably an enormous jump between the character of a local market for 5,000 people and one for 10,000; even between one for 8,000 and one for 10,000. Per capita sales in suburban towns of 5,000 and under are not much more than half those found in our eleven towns of over 10,000.

Moreover, this ratio will not hold even for a community of 10,000, if that community is a more dependent suburban type (i.e., closer to a large center), and it will most certainly not hold for such a community planned for an urban district. In short, all that can be useful to other planners in this study is a suggestion of *method*.

But this method is one that can be applied to similar problems for any community. It is based on ascertainable facts as to consumers' buying habits and available data on successful stores instead of on quantitative uncritical surveys of existing conditions. It shows how many stores can pay their way, not how many are needed to repeat the tragic conditions of past failures.

III. LOCATION

Neighborhood shopping centers serve purely local functions. They can depend on little or no trade from the outside. They should be placed and planned to serve and hold as much as possible of the local trade.

They should be located so that any resident may be able to either walk safely and easily to them (at least for daily convenience goods), or ride comfortably and find a parking space. If walking is made safe and attractive as it is in Radburn by completely separating pedestrian from vehicular traffic, and by paths passing through parks, there will be much less use of automobiles in local shopping. The wasteful use of the machine is likely to be more limited in the future, for even after the depression is over we will have to face reality and live on earnings rather than debt. If residents are to walk to their stores, no home should be more than half a mile from a neighborhood shopping center.

In more sparsely populated sections the shopping centers must be more widely separated. If the automobile is to be used for shopping, it is essential that stores be located where there is adequate and convenient space for parking. Many retail centers have lost their patronage through inadequate facilities for nearby parking. It is natural that it is in California, where the proportion of

automobiles to population is greatest, that the effect on market planning is most apparent. There it is being recognized that parking is not a public but a private function. The Bureau of Foreign and Domestic Commerce estimates that throughout the country about a million cars are taken off the streets annually by merchants' parking provisions.

Each neighborhood shopping center should be in a carefully planned concentrated area, with all the possibilities for necessary growth considered in the original plan, leaving no leeway for shoestring development. Related stores should be planned together, and as far as possible, the whole group should be on one side of a street or in one block. If this is not possible, they should be connected by over- and under-pass.

For a long time there has been a more or less spontaneous recognition in store policy of the fact that the modern highway is a dividing line and not a means toward concentration. In most large cities, one side of a main thoroughfare is devoted principally to women's shops, while the other may be quite different in character, perhaps catering principally to men buyers. And often, even in quite small towns, food and related shops will string out down one side of a street rather than cross it.

The local shopping centers should be on or contiguous to a main neighborhood street but *not* on a regional highway. A neighborhood center's function is local. It gets little if any patronage from through traffic and such a location would be a nuisance and a danger to resident shoppers. The land is too expensive. Parking facilities are difficult to provide.

Last year the Los Angeles County Regional Planning Commission made a series of careful studies of the effectiveness of various shopping centers in picking up passing trade throughout the suburban areas of the county. A careful count was made of the number of automobiles that entered each shopping district, as compared with the number of those that stopped for purpose of shopping. As walking is practically a lost art in Southern California, it was presumed that all consumers come in automobiles. The count in each case was made during twelve hours for three days and the figures given were based on an average. It was found in every case that a far larger percentage of those passing through the retail center stopped when it was off a main traffic road.

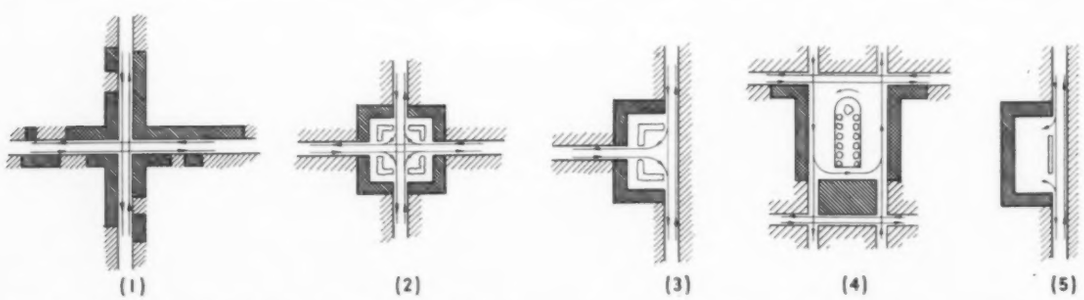
In a large community a number of shopping centers will be needed to give easy access to all. All consumers should have variety of choice of all products. But it is not strictly necessary to provide competition in every type of business in each single subcenter. In all but the more sparsely settled neighborhoods it is possible to have two centers within walking distance (one-half mile) of all homes. Where there are a large number of automobiles, the owners can easily prevent local shops from taking advantage of them by monopoly.

In a community of 10,000 such as the northern part of Radburn, there will be probably at least three centers. Only one of them will carry any large amount of specialty or shopping goods. Offices and the greater part of service enterprise will also be grouped in the main center. The smaller nuclei will be mainly for food markets, and possibly with such services as cleaner, laundry and shoe repair.

Shopping centers should be located on the interior of a development where the property is in single original ownership. If placed at the corners, competitive groups could be set up nearby which would invalidate all the constructive planning activity of the original neighborhood.

IV. THE FORM

The form of the American store, like that of the urban house, has been molded to fit the requirements of narrow rectangular lots rather than functional requirements of human needs. Stores have been measured by the foot, not by use, because they have been turned out like sausages, long strips of them all alike, no matter how different might be the requirements of site, of special use, or of grouping. It is astounding how obstinately the stereotyped standardized form of store has persisted in spite of its inconvenience and the fact that modern practice and custom has made it obsolete in form and wasteful in use. Only gradually and in a few places have new forms begun to take



(1) Originally neighborhood shopping centers grew up around the intersection of two streets and gradually spread. (2) Architectural symmetrical plaza does not lessen dangers of crossing streets. (3) and (4) Shopping center developed at one side of main traffic road; danger still exists from secondary roads. (5) A drive-in market such as has been built in Washington, D. C., in which all through traffic of automobiles is eliminated.

shape to meet the real needs of the storekeeper, customers and the community.

The automobile has been one of the dominating features of American life for more than twenty years and yet most stores are still planned without any recognition of the needs of parking. The customer is inconvenienced and the shopkeeper loses trade because this prime need is not yet recognized in any but a few places.

The danger of the automobile is gradually forcing new groupings of shopping centers. Originally they grew up around the intersection of two streets and gradually spread in a disorderly way in four directions. The difficulty of crossing traffic is leading to the concentration at one side of a road. But there are still hang-overs from the past. Architects actually plan symmetrical plazas for shopping with attractive looking store buildings at four corners of intersecting roads just as though there were no automobiles and the functions of the buildings could be made like the exterior treatment for an age long past.

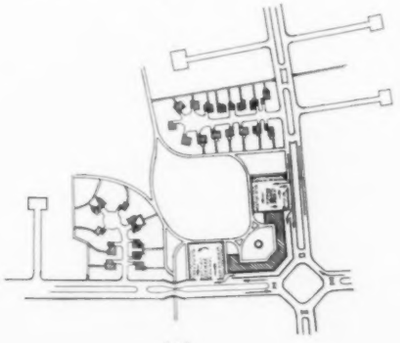
The California drive-in market has come closest to a recognition of the functional requirements of a modern shopping center. The rapid development of such regions as Los Angeles has led to the building of local shopping centers as a unified group planned for a special use and under a single management. The need of parking space has been recognized as a dominant requirement.

"Open Display" is the term most frequently applied to the modernization of store plans and interior arrangement. Everything that is for sale must be not only easily visible to the purchaser, but if possible must be within reach. Low, open shelves and complete circulation facilitate self-service, or at least reduce the cost of clerks. The store itself is likely to provide the best window display, instead of a dusty clutter of objects against an "art" background. In general, the modern food store needs a greater proportionate width to depth than the old unit.

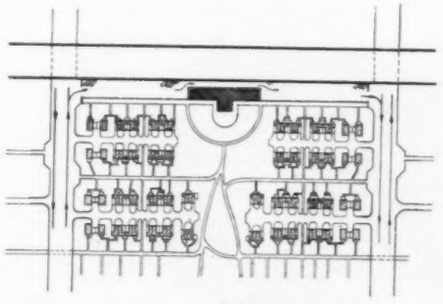
Open display in shallow shops facilitates buying and increases the rate of turnover. The California storekeeper has apparently discovered that the need of keeping a large stock of all kinds of goods in storage like an old country store has disappeared as a result of the facility of delivery by auto truck. It is much better to keep supplies in a central warehouse where they have better care at less cost and thus save about half the depth of the store. The space saved is much more valuable for parking of automobiles.

When the neighborhood shopping center is designed as a group instead of a series of separate stores it can be made an attractive feature instead of a monotonous eyesore. Much of the beauty of the Southern California store groups comes from their colorful display of fruit and vegetables in the open. We can see no reason why the store fronts should not be open through the greater part of the spring, summer and autumn, even in cities as far north as Chicago and New York.

The final step in making the shopping center completely functional in relation to modern living is still to be realized. In the community of the future, the purely local store will follow the example of the Radburn house. It will face toward the life of the community which will center around the park. Most people will walk to the store because it will be convenient, safe and enjoyable. There will be facilities for parking automobiles, but in most built-up communities this will be of much less importance than a safe place to park the baby where the mother can watch it while she shops. The store in some cases may have two entrances and show windows, one the principal one, toward the park, the second toward the highway. But the street side of the store will in most cases be used only for delivery. Where there is only the traffic of fast-moving automobiles, the pedestrian ways will pass through the parks as they do at Radburn. Show windows are of little use to people driving by in automobiles. Well-designed lettering as a part of the group design will do much more to draw passing trade. But the neighborhood store should be designed to meet the comfort and convenience of the local customers on which it must depend. When the neighborhood store group has turned its face toward the life of the park rather than the haste and danger of the traffic road it will become a real center of the community. Its whole



(6)



(7)

(6) and (7) The Neighborhood Shopping Center in the modern town planned so as to care for and separate pedestrians, parking and delivery.

Albert Frey

Drive-In Market, Los Angeles, California.

character may change with the development of such features as the open-air restaurant and the out-of-doors café.

V. CONTROL

What is the use of developing a scientific method of store planning? None whatever, if present methods of subdivision and chaotic development are allowed to continue. None whatever, unless the complete, planned neighborhood is accepted as the minimum unit of development. No scientific store-planning method can be applied to speculative methods of development. But, on the other hand, one of the basic reasons for the acceptance of the neighborhood unit is the *necessity* for economic planning, for the preservation for the benefit of the community of the value increment which the community itself brings to its property. And this real increment (as opposed to inflated speculative expectation-value) which must be planned for, guarded and permanently preserved, occurs in store properties.

Many of the proposed limited dividend housing companies working under the New York State Housing Laws count on making a success of their enterprises on the basis of a goodly profit from stores. Their expectation of rental values is generally far beyond what can be realized because their figures generally have not been based on any scientific relation to the buying power of the future population.

Increment value that comes to property through the presence of population affects store values much more than residential property. The retention of the maximum of the spending power of the community within the neighborhood is greatly affected by the manner in which the shopping center is planned and its development is controlled.

To maintain a healthy retail shopping center and guard the interest of all concerned, all property that can be used for store purposes must be in single ownership. Where the community is being developed by a limited dividend company in the interest of the residents, it is possible to preserve for the inhabitants the extra profits that can be derived therefrom.

The best method of serving all the interests permanently, however, is the community ownership of land and buildings for stores from the beginning.

In addition to enhancing the possibility of success in all the factors mentioned above, such an arrangement is the only one whereby the increment in value created by the community may be preserved completely and assuredly for its own advantage.

Only in these ways can property be controlled

so as to preserve the wealth of the community, be an advantage to the community, or enrich the developer of the property. What this means in practice is:

1. Limiting amount of property to be used for stores in the development so as to secure maximum possible return without injury to consumer.

2. Keeping possession of all such land.

3. Preventing use of other property of development for business use by:

(a) Continued ownership of all land by community or developing company.

(b) Sale of residential land only with restriction permanently preventing its use for business. Zoning may help, but it is not a permanent guarantee against change as is private agreement. It is safer to have both.

4. Preventing value from flowing over the edge of property. If shopping center is too near edge of the development, part of it will flow over through competing stores in neighborhood properties taking advantage of attraction of parking facilities.

Restrictive legislation has been of no assistance in restricting the number of stores. Zoning at its best has not met the situation. At worst it has caused large areas to be assessed as business property far in advance or beyond the final limits of any possible need, and has thus directly encouraged the erection of wasteful tax-payers.*

The planner for the community organization must not only provide convenient and attractive shopping centers; he must limit the area, limit the number of shops, and scientifically apportion the kinds of retail enterprise. He must provide for competition and varied choice of each commodity, but not over-competition. He must see that every sort of shop which a given community will support is given a place, and he must keep out over-specialized types which the character of the community does not warrant. He must plan for rentals which will give the landlord a good return, leave the shopkeeper with a decent living, and leave the municipality with an adequate and assured tax income. He must plan and build the center as a pleasant whole, and as a nucleus for a future center commensurate with the planned probable growth of the community as a whole. The planner must achieve a practical balance between all these factors. Such coordination is achieved by thorough understanding of each element plus a clear conception of the whole pattern.

NOTE ON EXISTING FORMULAS

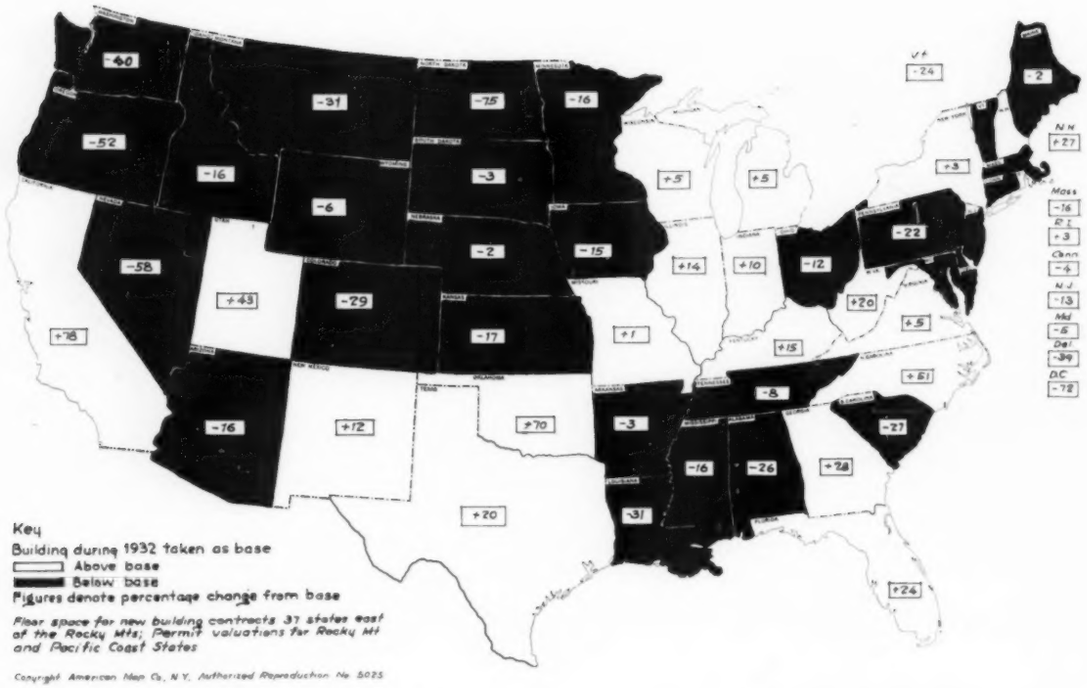
**The Regional Plan of New York and Environs* made a tabulation of retail stores as listed in the classified telephone directories of seven large cities (100,000 to 3,000,000) and used the averages obtained in this way without any sort of modification, to determine the number and kinds of stores for a community of 6,000 population. The *Chicago Regional Planning Association* went out and measured the store frontage in 17 cities and villages in the Chicago region: and the resulting average, likewise unmodified, of some 50 feet per 100 inhabitants has been widely used as a "planning" gauge. The *Milwaukee County Regional Planning Department* made a somewhat more critical survey, to show over-zoning for business. Various city planners have their own rule-of-thumb formulas, and Gardner S. Rogers of the U. S. Chamber of Commerce evolved a system of coefficients between population and stores, based on the Trial Census of Distribution, which would be admirable if that census had not already proved beyond controversy that existing conditions ought by no means to be duplicated.

NOTE ON BUSINESS ZONING

*Harland Bartholomew says: "The over-zoning of business frontage is detrimental in many respects. It has created a great surplus of business property. It has stimulated speculation in such property beyond reasonable limits, the reaction from which has resulted in depressed values. It has produced involved problems of taxation. It has invited and produced blighting of large stretches of property along our main thoroughfares."

In many cities all property fronting on main roads has been automatically zoned for business. Dr. Aronovici points out that "on this theory it was found that if every boulevard frontage in Los Angeles County were to be zoned for business there would be more business frontage than could be reasonably expected from all the population of the United States." A survey made in six districts in Milwaukee County brought to light the fact that, as a result of "shoe-string zoning," only 39.88 per cent of all the area zoned for business was actually in business use—most of the districts having already achieved their maximum density.

Dr. Richard T. Ely, land economist, said in the *New York Times* that "places can be found where, whatever standards one may take, there is twenty times the amount of property plotted for business frontage needed to satisfy any economic demand."



BUILDING TRENDS AND OUTLOOK

By L. SETH SCHNITMAN, Chief Statistician, F. W. Dodge Corporation

During the initial three weeks of January contracts awarded for all classes of construction in the 37 eastern states aggregated $146,466,500. This total compares with $207,209,500 for all of December and only $83,356,000 for January, 1933.

Of the contract total for the three-week period $128,000,000 or about 88 per cent was for publicly-financed undertakings; this proportion is by far the largest ratio of publicly-financed construction in any similar period of record. The back-log of PWA allotments for construction yet to reach the contract stage is still very large, exceeding a billion dollars; thus it should be clear that considerable sustaining influence on the contract record can be counted upon from this source over the next few months.

On indicaitons from the three-week record of January, privately-financed undertakings for the full month fell substantially below this class of work as reported during January, 1933. Unless our economy is undergoing a most fundamental change we must still rely upon private construction to produce the needed stimulus to business. It is hoped that publicly-financed construction activity will provide a sufficient rise in mass purchasing power to warrant increased private construction. But to insure this desired end effective co-ordination of all governmental agencies interested in the problem appears as the first order of business.

MATERIAL PRICE MEASURING ROD*

The prices in this tabulation enable one to visualize at a glance the main trend of the material market. Their significance does not extend beyond that point, and the explanation below should be read carefully.

F. W. Dodge Corporation Composite Prices as Indicated in Explanation

Material	This Month	Month Ago	Year Ago
Portland Cement	$2.20	$2.20	$2.05
Common Brick	12.35	12.34	11.73
Structural Steel	1.65	1.65	1.60
Lumber	16.46	16.44	15.50

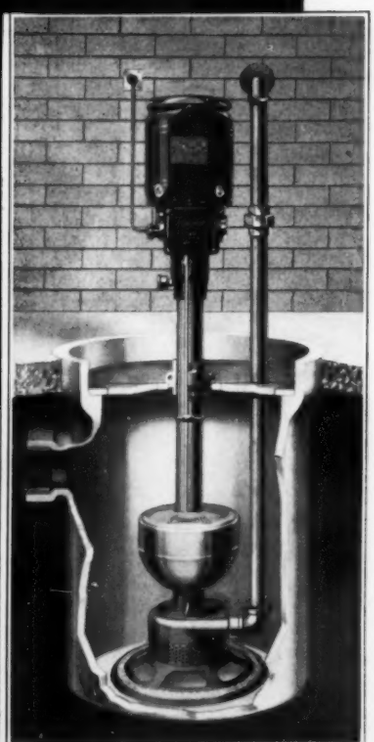
Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M, delivered on the job.

*As previously published in *General Building Contractor*.

RUST PROOF

COPPER AND BRONZE THROUGHOUT

PENBERTHY AUTOMATIC ELECTRIC SUMP PUMPS



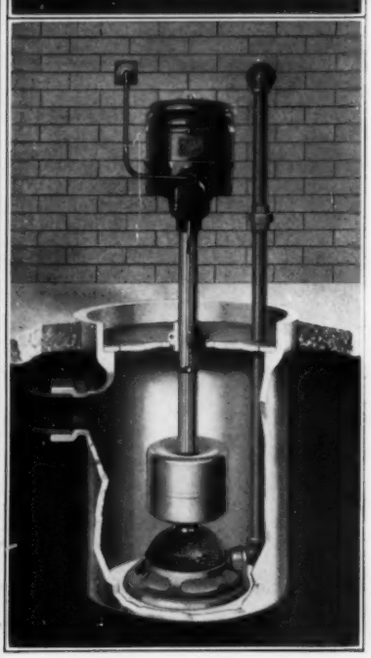
MODEL K
(No. 1K shown)
Retail Price
$65.00

¼ h.p. repulsion induction motor.

3600 g.p.h. maximum capacity.

All standard electrical specifications.

Made in 5 sizes for sump depths to 8½ ft.



MODEL 33
Retail Price
$39.50

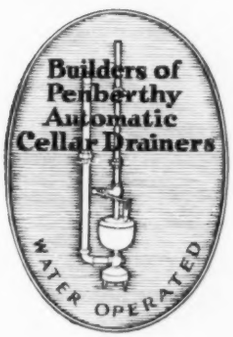
⅙ h.p. motor.

1400 g.p.h. maximum capacity.

105-120 volts, 60 cycles; 220 volts, 60 cycles optional.

Made in one size only for sump depth from 10" to 24".

PENBERTHY PRODUCTS



THE architect need not be told the many advantages of using copper and bronze in the construction of equipment for the removal of seepage water from basements, elevator sumps, scale pits, piping tunnels, etc.

Penberthy Automatic Electric Sump Pumps and Automatic (water or steam operated) Cellar Drainers are built of copper and bronze throughout . . they cannot rust.

The design and workmanship of Penberthy Pumps are as outstanding as the quality of the materials used in them. Consequently, these pumps are trouble-proof as well as rust-proof.

There is a type and size of Penberthy Pump for every purpose. Sump covers for both electric and water operated units can be supplied at slightly additional cost. Penberthy Pumps are stocked by leading jobbers everywhere.

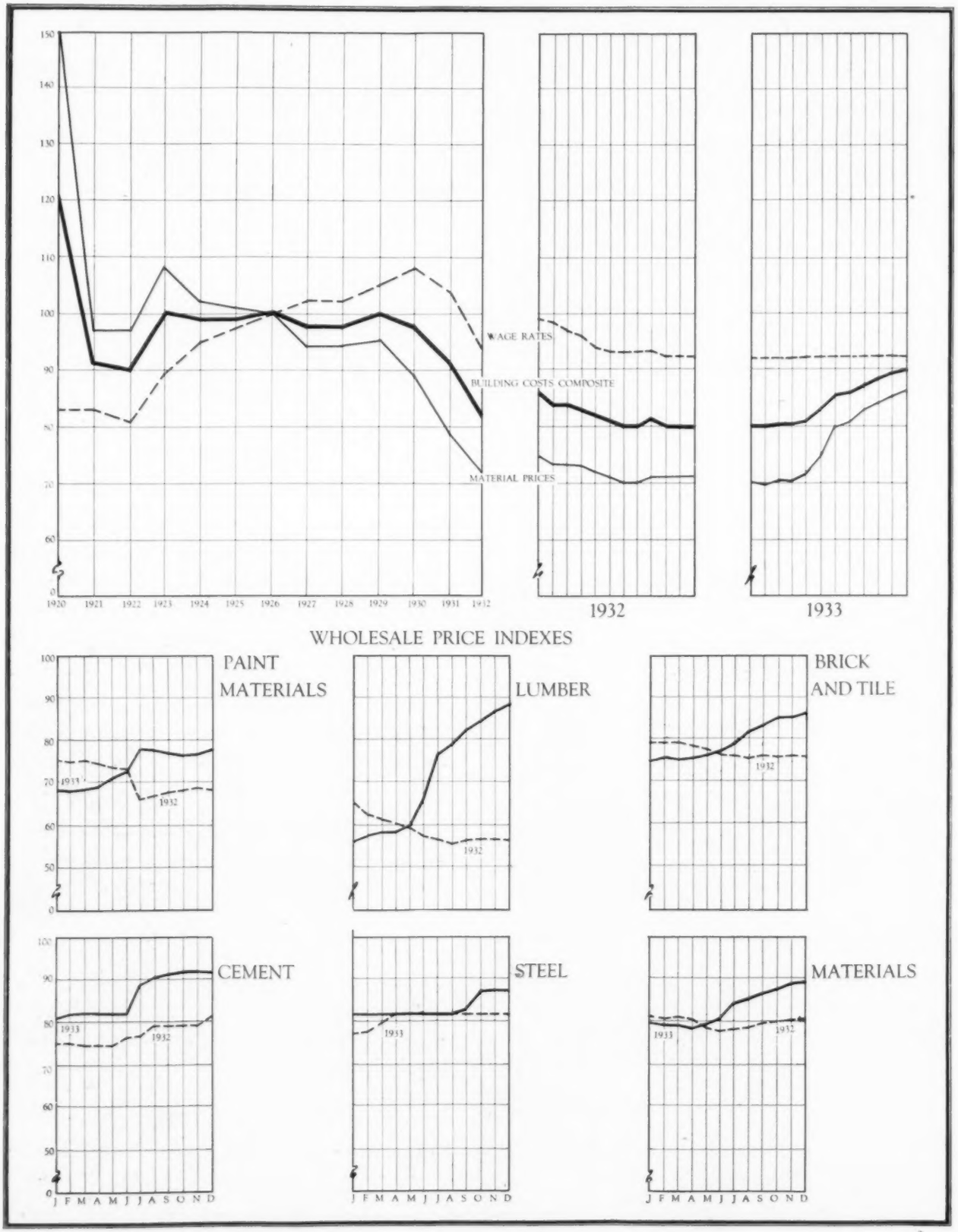
PENBERTHY INJECTOR COMPANY

Established in 1886 — DETROIT — Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

1926 Monthly Average = 100



Preferred for
PUBLIC BUILDINGS

Efficient and well planned structures of the future will obtain the full approval of their sponsors if the specifications for the piping call for NATIONAL. The use of NATIONAL Pipe means more economical operating costs for the owner because it gives lasting, uninterrupted service. It also results in better profits for those who install it because of its smooth, easy working qualities. This is why it has been so universally accepted and so generally used in America's Public Buildings.

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL PIPE

WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of January, 15, 1934

	Asbestos Workers	Bricklayers	Bricklayers Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	‡.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.00	*1.00	1.00	.65	*1.00	*1.00	*1.25	*1.37½	*1.37½	.20 .30	*1.25	*.90	*1.25	1.00	*1.00	.75	.75	*1.12½	*1.00	1.00	1.25	.72
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	70	*1.25	*1.12½	*1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.00	*1.12½		*1.00	.90	*1.00	1.00	1.12½	1.12½	.40 .50	1.00	*1.00	1.00		1.00	.50	1.00	1.00	*1.00	*1.12½	*1.18¾	
Chicago	1.37½	1.50	.82½	*1.31¼	1.31¼	1.50	1.31¼	1.31¼	1.35	82½	*1.37½	1.41	*1.37½	88¾	1.37½	1.37½	1.40	1.37½	1.37½	1.50	1.37½	1.00
Cincinnati*	1.15	1.25	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	.92½	1.07½	1.07½	1.12½	1.00	1.00	
Cleveland*	1.17½	1.25		1.12½	1.12½	1.37½	1.12½	1.25	1.25	.72½	1.25	1.00	1.25		1.25	1.15	1.37½	1.12½	1.25		1.25	.81¼
Columbus	1.00	1.30	.62½	.80	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1 00	.80	1.00	.80	1.00	.75	1 25	.50
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	1.35	.35	1.10	1.00	1.25	.80	1.15½	.85	1.00	1.00	1.15½	1.30	1.50	.60
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.25	.65	1.00	1.00	1.00	1.00	1.00	1.00	.55	1.00	1.00	1.25	.75	1.25	1.12½	1.12½	1.12½	1.25	1.50	1.25	.80
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	1.00	1.00	.50	.80	.80	1.00	.80		1.00	.50	.80	.80	1.00	.70	1.00	.70	1.00	.85	1.00	1.00	1.00	1.00
Erie		1.00	.45 .50	.80	.80	.90 *1.00	.90	.60 .80	.90	.35	.90	.60 .70	1.00	.40 .50	1.00	.50 .60	.80 .90	.80 .90	*1.00	1.00	.80	.40 .50
Houston		1.00	.35	.75	.75	1.00	.75	1.00	1.00	35		.62½	1.00	.35	1.00	.75	1.00		1.00	1.00	1.00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	.90	1.32½	.80	1.00	1.00	1.00	1.00	1.00	1.00	.60	1.00	1.00	1.06¼	.80	1.00	.92½	.92½	1.00	1.00	1.12½	1.25	.62½
Los Angeles††	10.00	8.00	6.00	7.00	8.00	7.00	8.00	9.00	10.00	4.00	10.00	7.00	9.00	6.00	9.00	7.00	7.00	8.00	10.00	8.00	6.00	†.7 5
Louisville	1.12½	1.00	.50	.80	1.00	1.00	1.00	1.00	1.00	.25 .35	1.12½	.90	1.00	.50	1.12½	.30 .50	.85	.85	1.12½	1.25	1.00	.50
Memphis	1.00	1.37½	.50	.50	.50	1.00	.75	.75	.75	.20	1.00	.75	1.25	.50	1.25	.25 .40	1.12½	1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.00	.75	.92½	1.00	1.25	1.00	1.05	1.05	.60	1.00	1.00	1.00	.75	1.00	1.00	1.00	.92½	1.00	1.00	1.00	.75
Minneapolis	1.00	1.00		.80	80	1.00	.80	.90	1.00	.45	.75 .85	.80	1.00	.70	1.00	.70	.70	.80	1.00	1.10	1.00	.65
Nashville		1.00		.60 .75	.50	.75		.60	.75	.30	1.00	.62½	1.00		1.00	60	.60	.60	.75	.50	.75	
New Haven*		1.20	.50 .60	.80 1.06¼	1.20	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	45 .65	1.27½	.80 1.00	1.20	.50 .60	1.06¼		1 50	1.06¼	1.06¼	1.20	1.20	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	.90	1.05 1.25	1.50	1.25	.35
New York City††	11.20	13.20	8.00	11.20	c11.20	11.20	12.40	11.20	13.20	6.60	11.20	9.00	12.00	8.50	c12.00	10.28	12.62	11.20	11.20	13.20	11.50	8.50
Oakland††	6.40	10.00	5.60	7.20	8.00	8.00	9.00	7.20	9.60	5.00	8.00	7.00	7.50	6.00	8.00	6.40	6.40	1.18	9 00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	.80	6.00	6.00	8.00			11.00	†.62½
Omaha	1.32	1.12½	.45	.90	1.00	1.00	1.00	.90	.90	.50	.90	.80	1.12½	.45	1.00	.72½	.95	1.00	1.00	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1.18½	1.25 1.37½	1.00 1.37½	.40	1.37½	.62½	*1.37½	.90	1.15	1.00	1.25	1.25	1.15	1.00 1.25	1.25	
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	70	*1.50	.87½	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	88.
Portland, Ore.††	8.00	*9.60	7.20	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	4.80	*8.80	7.04	*9.60	*7.20	*8.80	7.20	7.20	*8.00	*8.80	*9.60	8.00	7.20
Reading	.70 .80	.90	.75	.75	.85	.75				.35	.75	.70	.85	.75	.90		.80	.80	.90	.75	.90	.50
Richmond	.60 .65	1.25		.40 .60	.35 .50	.80		.20 .70	.70	.20	1.00	60	.60		1.00	.25 .60	.25 60	1.00	.90	.75	1.25	
Rochester	.91	1 12½	55	*.90	*1.12½	*1.15½	.90	.70-*1.00	.70-1.00	.55	.90	*.90	*1.12½	.55	*1.06¾	*.80	*.80	.90	*1.06¾	*1.12½	1.12½	47½
Salt Lake††		9.00	5.00	7.20	8.00	8.00	8.00	8.00	8.00	4.00	8.00	7.20	9.00	6.50	8.00	7.20	8.00	8.00	8.00	9.00	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7.00	4.00 7.00	1.75 4.50	5.00 10.00	1.50 2.50	4.00 7.00	3.00 7.00	4.00 8.00	2.00 3.00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	9.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8.80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	7.20	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	1.00	1.00	.50	.85	.75	1.00	1.00	1.00	1.00	.50	.90	.90	1.00	.60	1.00	.90	.90	.85	1.00	1.00	1.00	.60
St. Louis	1.25	1.50	1.00	1.25	1.31¼	1.50	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1 43¾	1.25	1.25	.76½
St. Paul	1.00	1.00		.80	.80	1.00	.80	1.00	1.00	.50	.90	.80	1.00	.70	1.00	.80	.80	.85	1.00	1.00	1.00	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.00	1.25	.60	.75-1.00	1.12½	1.00	1.12½	1.25	1.25	.40	1.00	1.00	1.25	.75	1.00	›1.00	1.00	1.00	1.00	1.25	1.25	.81¼

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. †Rate per hour. *On 5-day week basis. c Correction. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

PLEASE SAMPLE OUR FREE SERVICE!

In this pleasant residence at Southport, Connecticut, telephone convenience is provided for by built-in conduit connecting four outlets. CAMERON CLARK, Architect, *New York City.*

MONTH after month, in these pages, we've presented the story of telephone convenience. We've illustrated well-planned homes with well-planned telephone arrangements. We've talked of the steps and minutes saved by handy telephones — the comfort and privacy they afford.

But nothing we can *say* is half as effective as a sample of our service. Won't you, on your next residence project, enlist the advice of the local telephone company? Trained engineers will help you prepare a conduit layout for walls and floors — will suggest strategic locations for telephone outlets — locations that meet immediate needs and anticipate future requirements.

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Why not call the local Business Office, now, while you're thinking about it? Ask for "Architects' and Builders' Service." No charge.

MANUFACTURERS' ANNOUNCEMENTS

Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publications describing in detail the products and materials mentioned.

IMPROVEMENTS IN KERO HEATER

Burner ratings in the two more popular sizes of Kero kerosene-burning automatic water heater have been increased to give fifty per cent greater water heating capacity. When heater is lighted, water supply is heated to set temperature, thermostat shuts off fuel supply to main burner leaving only tiny pilots burning. When hot water is drawn, cold water enters chilling the thermostat which opens fuel supply to main burner. Heating begins at once, thus the storage supply of hot water is constantly maintained. This principle of operation, according to manufacturer, assures reliable and economical service. The Kero is a product of Bastian-Morley Co. and is distributed nationally by Crane Co.

To Obtain Further Information

about any products mentioned, indicate the number or name of product and send to THE ARCHITECTURAL RECORD, 119 West 40th Street, New York, N. Y.

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J-M HARD BOARD

Johns-Manville announces the addition of J-M Hard Board to its list of building materials. This new material is an all-wood fiber board product of unusual density, strength and toughness. It has a smooth surface, pleasing color and, in its natural state, provides a mottled or burl effect. It may be painted, sttained, varnished or waxed in the same manner as wood. Among its various applications, J-M Hard Board is used for paneling walls and ceilings, for partitions and folding screens, display windows and store counters, window shelves and radiator shields, and for the construction of practically every household article that can be made of wood. Because of its waterproof qualities it is used out-doors with little or no surface treatment. A specially processed material, J-M Tempered Hard Board, is also available for use where extra hardness and toughness are required. Both Hard Board and Tempered Hard Board are furnished 1/8", 3/16", 1/4" and 5/16" thick, 4 feet wide and 6, 8, 9, 10 and 12 feet long and in the following short sizes: 4 feet wide by 1, 2, 3 and 4 feet long.

THE FACTS ABOUT WELDED PIPING

The uses and economies of welding for installing piping for buildings are discussed in a booklet-collection of releases on this subject by Air Reduction Sales Co. of New York. Among the characteristics of welded piping that are featured in this booklet are lower first cost, reduced weight, efficiency in operation, leak-proof permanence.

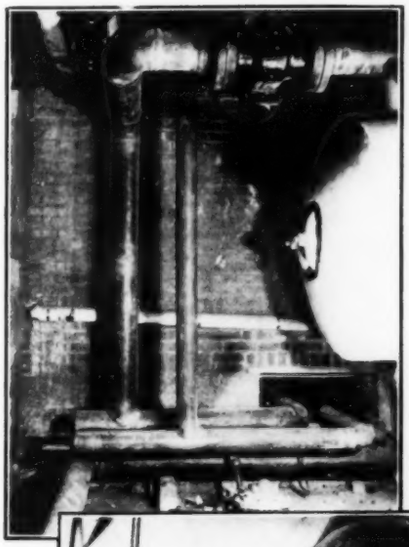
ECONOMICAL

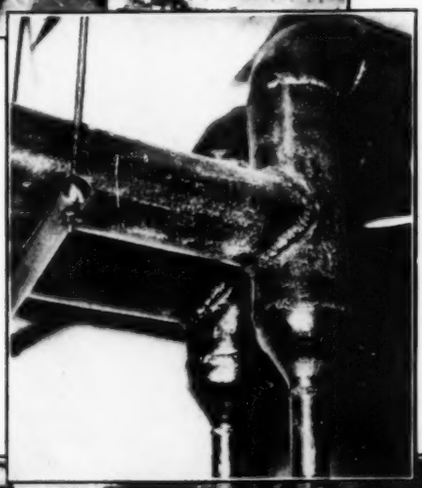
In the long run it costs less to use DURIRON ACID-PROOF PIPE AND FITTINGS because there is no replacement expense.

THE DURIRON COMPANY, Inc.
404 N. Findlay Street
DAYTON, OHIO
See Our Catalog in Sweet's

DURIRON
ACID PROOF
DRAIN PIPE

NRA MEMBER U.S. WE DO OUR PART





Another fine example of "Piping Tailored To Fit"

The New York State Reconstruction Home at West Haverstraw, N. Y., a recently completed project, provides this excellent example of the rapidly spreading practice of installing WELDED piping in buildings, using the AIRCOWELDING Process. This is the oxyacetylene process that was developed specifically for pipe welding. It greatly reduces pipe welding costs by more than doubling welding speed and reducing welding rod and gas requirements from 30 to 50 per cent.

The extra heavy pipe used on this project presented no problem for AIRCOWELDING. Typical sections of the 6 and 8-inch piping are shown. These views are expressive of the way in which welded piping is literally "tailored to fit." Note the smooth, easily insulated joints. That neat swedge reducer in the center illustration is eloquent of the easy, effective way in which piping problems can be solved with the oxyacetylene welding torch.

Send for these bulletins

These two Bulletins clearly define the many decisive advantages of WELDED PIPING for buildings, and the reasons for the substantial reductions in pipe welding time and costs effected by the AIRCOWELDING Process. Copies will be supplied for the asking.

AIR REDUCTION SALES CO.

General Offices: 60 East 42nd Street

NEW YORK, N. Y.

PIONEERS IN THE DEVELOPMENT OF PIPE WELDING TECHNIQUE AND EQUIPMENT

ON THE *Dotted Line*....

You have formed a mental picture of your completed job. You are concerned not only with how it will perform, but how it will look. Will it come up to your expectations in every respect? Will it show evidence of careful planning, proper coordination of parts and sound engineering? Will every detail down to the last pipe and hanger be in keeping with the high quality installation which you have visualized . . . in short, will it look like the job you would like to do yourself if you could put it together piece by piece . . . a job that will not only perform efficiently and dependably but will look the part as well? Satisfy yourself that it will, before you sign on the dotted line.

YORK ICE MACHINERY CORPORATION • YORK • PENNSYLVANIA

NRA REFRIGERATION • AIR CONDITIONING
MILK & ICE CREAM PLANT EQUIPMENT

FAIRHURST "UNIT-FOLD" PARTITION

The a.c.f. Fairhurst Patent "Unit-fold" Partition is divided into a given number of doors of specified type and thickness. No hardware is visible except operating handle on end door, doors being mounted on single heavy ball-bearings, two casters to each door. Both top and bottom are provided with automatic locking device, top guide having an automatic vertical adjustment. There is a master-door at folding end with mortise lock and catch, no bolts or hinges being applied. In the "Duo-fold" Partition, another a.c.f. Fairhurst product, sections are hinged in pairs of two doors each, with invisible hinges. Partitions roll on single heavy ball-bearing adjustable casters, on small track, flush with floor. Top guides slide in a steel groove; top and bottom guides having automatic vertical adjustment. Illustrated literature on request.

A NEW TYPE OF WATER PAINT

A water paint in colors that may be applied on damp or dry masonry surfaces of every description, including fresh lime plaster, Keene's cement, green concrete, brick, stone and tile, has been developed by Master Builders Research Laboratories. Once applied to the surface (by brush or spraying) it quickly hardens and is therefore, according to manufacturer, unaffected by moisture, efflorescence or similar ills. This water paint, known as Colored Masterseal, uses a bituminous emulsion with colors as a base. It will not discolor or rub off, and may be washed, as desired, without affecting the durability or color of the product. This new product may be applied to lime plaster or Keene's cement as soon as it is set up (but before drying out) without incurring danger of alkali-spotting or lime-burning; also, unlike ordinary water paints, it can be used with equally good results on exterior as well as interior surfaces. Although a water paint, it produces a waterproof surface. Further details about the composition and uses of this water paint will be furnished on request.

AUDITORIUM SYSTEMS

The development and present problems of air conditioning are reviewed in a booklet "The Key to Economy in Comfort Cooling" published by Auditorium Conditioning Corporation of New York. Air conditioning systems planned by this corporation employ a patented by-pass which is said to eliminate major costs common to the typical central system installation. The booklet is diagrammatically illustrated, showing the economies in equipment that can be effected without loss in efficiency by the use of one of the several Auditorium by-pass systems.

PAVEMENTS RESURFACED WITH CONCRETE

A 20-page booklet recapitulating an extensive survey of concrete resurface projects all over the country is offered by Portland Cement Association of Chicago, Ill. Includes table giving recommended thickness and design for varying conditions of traffic and support.

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FOR THE WORLD'S TALLEST
EMPIRE STATE BUILD'NG
NEW YORK CITY
Architects:
Shreve, Lamb & Harmon
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MERCHANDISE MART
CHICAGO
Architects . Graham, Anderson, Probst & White
Contractors . . John Griffiths & Son Co.
Chief Structural Engineer . . . M. Gunderson
Consulting Engineer . . . . Frederick Pearson

AMERICAN STEEL & WIRE COMPANY

WIRE FABRIC

THE STEEL BACKBONE OF CONCRETE

For Cinder Concrete or Stone Concrete Floor Arches

Building achievements of the epoch—to challenge time for decades to come. It is significant that these structures employ concrete floor arches. The Empire State Building floors are of the Cinder Concrete Arch type and the Merchandise Mart floors of Stone Concrete.

Doubly significant is the fact that American Steel & Wire Company Wire Fabric was chosen for reinforcement. Note—in the action photograph above—how easily this Wire Fabric is installed; one of the many reasons why it was specified.

1831 — MORE THAN 100 YEARS of PROGRESS IN WIRE MAKING — 1934

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
First National Bank Building, Baltimore

Pacific Coast Distributors: Columbia Steel Company, Russ Bldg., San Francisco

Export Distributors: United States Steel Products Company, New York

ROOFING CRIMES NO. 1

Permanent cracking shortens the life of some types of roofing. This photograph shows a smooth-surfaced roof after four years.

DON'T LET THIS HAPPEN TO YOUR ROOFS

Thousands of flat roofs fail this way. Water from rain, hail, and snow flows into these cracks and spreads over a wide area underneath the upper ply. From then on, the roofing no longer presents an impervious surface to the weather. Instead it acts more like a blotter, holding water within itself; it is only a matter of time until this water reaches the roof deck and enters the building below.

★ ★ ★

THIS is only one of several types of failures in roofings. If you are interested in the other types of failures, write for our circular: "Do's and Dont's on Roofing".

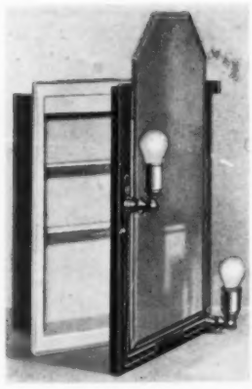
You can avoid permanent cracking and other types of roofing failures by specifying Koppers Old Style Pitch and Koppers Approved Tarred Felt. Let us send the circular which shows why Koppers Coal Tar Pitch Roofs last years longer.

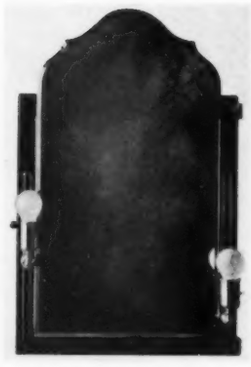
FOR YOUR ROOFS *specify*

1. KOPPERS COAL TAR PITCH
2. KOPPERS COAL TAR SATURATED RAG FELT
3. AND A GRAVEL OR SLAG SURFACE

KOPPERS PRODUCTS COMPANY
KOPPERS BUILDING - PITTSBURGH, PA.
Birmingham - Boston - Chicago — KOPPERS — New York - Providence - St. Louis

ALSO: Koppers Tarmac for streets, driveways, tennis courts, etc.
Koppers Tar Saturated Fabric for Membrane Waterproofing
Koppers Lumino (Tar Aluminum Paint)
Koppers Plaster Bond Paint
Koppers Dampproofing Paint





EDGE-LITE BATHROOM FIXTURES

An arrangement of lighting fixture and bathroom cabinet which makes it possible to move the lighting units up or down either side of the cabinet or across the bottom in either direction, is produced by the Faries Manufacturing Company of Decatur, Illinois. Edge-Lite is an integral part of the bathroom cabinet door or frame. The mobility of the lights, moving along tracks or slots, allows for manual adjustment to eliminate facial shadows and to focus light advantageously for shaving or for application of cosmetics. It is said that the Edge-Lite fixtures provide sufficient illumination for entire bathroom. Available in any color or chromium-finished and in various forms designed for new buildings and for remodeling.

TRADE ANNOUNCEMENTS

AMERICAN CYANAMID COMPANY

American Cyanamid Company, 535 Fifth Avenue, New York, has executed a lease with Rockefeller Center, Incorporated, covering about 120,000 square feet in the new R. C. A. Building at 30 Rockefeller Plaza, New York. The lease is for a term of twenty years commencing March 1, 1934. It is expected that the new space, on five adjoining floors, will be occupied about April 1. American Cyanamid Company, large producer of industrial and mining chemicals and fertilizer materials, has plants and sales offices in many States.

NATIONAL GYPSUM ENTERS METAL LATH BUSINESS

National Gypsum Company, Buffalo, N. Y., has purchased the metal lath plant of the Kalman Steel Corporation, Division of Bethlehem Steel Company, located at Niles, Ohio. M. H. Baker, President of National Gypsum announced that the Kalman property will be converted into a modern plant for the manufacture of metal lath and metal reinforcing items as a step in this company's expansion in the wall and ceiling building products field. The new products are to be sold under the "Gold Bond" brand, widely known as the trade name for insulation and fiberboard products of the National Gypsum Co. Several months ago National Gypsum assumed ownership of the Macoustic Engineering Company of Cleveland, Ohio, manufacturer of sound absorbent acoustical plasters.

A CONCRETE STRUCTURE

Sunset Tower, Los Angeles; LELAND BRYANT, *Architect*

PLAIN OR MOULDED SURFACES

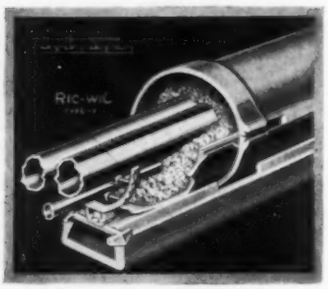
CAST IN PLACE

This all-concrete apartment building is an example of the application of a plastic material to architectural requirements.

The concrete exterior shows how this material may be used to produce, with equal facility, either severely plain or intricately moulded surfaces.

PORTLAND CEMENT ASSOCIATION

Room 282—33 West Grand Ave., Chicago, Ill.



For underground steam lines:

A completely engineered conduit system
Delivers 90%+ efficiency
All parts interlocking
Asbestos Dry-paC insulation
Variable types of construction and materials to meet all conditions
Typical drawings and specifications on request

See our Catalog in Sweet's

THE RIC-WIL CO., 1562 Union Trust Bldg., Cleveland
Agents in principal cities

REGISTERED IN U. S. PATENT OFFICE

RIC-WIL

CONDUIT SYSTEMS FOR UNDERGROUND STEAM PIPES

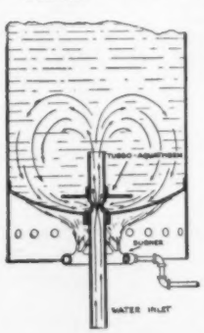
Super Aquatherm Gas Underfire

A NEW INVENTION

Keeps Sediment Out of Range Boilers *and* Hot Water Storage Systems

DAHLQUIST-TURBO

Dahlquist copper automatic hot water storage systems and range boilers equipped with the TURBO use 50% less gas and deliver an abundance of clean, fresh, rust- and sediment-free hot water day and night.



Turbo-Aquatherm

A new patented device which prevents mud from accumulating in the boiler.

Copper is nature's own material for storing hot water; never rusts or deteriorates. But regardless of the metal used, sediment in the water will form a coating of mud on the bottom unless it is equipped with Theodore W. Dahlquist's latest invention—THE TURBO.

The patented TURBO placed in all Dahlquist's boilers at no extra cost prevents mud from forming—keeps hot water clean—prevents costly burnouts—reduces cost of gas.

Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.

DAHLQUIST MFG. COMPANY
70 West 3rd Street **So. Boston, Mass.**

REPLANNING OLD AREAS

By JOSEPH PLATZKER

(Continued from page 103, editorial section)

Advantages of Re-Planning

High land values in the slums should not be considered an insurmountable obstacle. Taller structures planned as independent neighborhood units of nine square blocks or more, plus low interest rates and possibly the government grant of 30 per cent, will answer the puzzling question. After all, new housing alone does not make a community. When we save the existing municipal services—the churches and other houses of worship, worthy places of entertainment, prominent business establishments, day nurseries, settlements, libraries, old established banking buildings—then new construction of large neighborhood units plays the part of modernizing a good old section.

Well-located slum areas will not be totally abandoned just because some architects seeking an easy road for their planning ideas prefer to create new neighborhoods miles away. Of course, no one could possibly fail to associate the outskirt developments with the strong effort toward decentralization of our congested industrial centers. In some of our cities these efforts may find little resistance. But if business is on the upward grade, as now seems evident, and continues to move up, then decentralization of industry will prove a very slow process indeed. So long as industry remains in important areas close to the geographical center of cities, workers in the offices and factories, to a considerable extent, should be given an opportunity to walk to work and not be compelled to spend from 1½ to 2 hours daily in long rides on subways or elevated trains. Slum clearance on a well-planned scale will serve a distinct public need: the cities should encourage such an effort for their own good in order to bring stabilization again in land values as well as in population.

Our leading cities would do well to establish perpetual inventories of slum areas that must be replanned and reconstructed in the near future because of their strategic location. With such an approach, it will be much easier to plan the elimination of many of our needless old streets that are expensive to the city to maintain and re-zone greater areas for strictly residential use.

Most slum areas are in a transition stage and will continue to shift for themselves for the time being. Thousands of owners of single parcels are waiting for a word of practical advice. To encourage wholesale modernization of single parcels over a widely scattered area will be expensive, and in the long run an unsuccessful investment, at least so far as the old-law tenements are concerned. Single units cannot much longer be managed as single units. The cost of upkeep has been getting ahead of income. The day is dawning for a new plan of either ooperative or corporate ownership of residential holdings, particularly in slum areas.